

**IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF OHIO
WESTERN DIVISION**

BRENDAN BERGER,

Plaintiff,

V.

**NATIONAL BOARD OF MEDICAL
EXAMINERS,**

Defendant.

Case No. 1:19cv00099

Judge: Hon. Susan J. Dlott

Magistrate Judge: Hon. Karen L. Litkovitz

DECLARATION OF CATHERINE FARMER, PSY.D.

1. My name is Catherine Farmer. I am over eighteen (18) years of age and, unless indicated otherwise, I have personal knowledge of the facts stated below.

2. I am employed by the National Board of Medical Examiners ("NBME") as Director of Disability Services. I am also the ADA Compliance Officer, Testing Programs. I hold a Doctor of Psychology degree.

3. The NBME is a not-for-profit organization that provides assessment services for the health professions. Its mission is to help protect the public through state-of-the-art assessment of the knowledge and skills of health professionals.

4. Together with the Federation of State Medical Boards, the NBME sponsors the United States Medical Licensing Examination (“USMLE”), which is a standardized examination used to evaluate applicants’ competence for medical licensure in the United States and its territories. The USMLE is designed to assess a physician’s ability to apply knowledge, concepts,

and principles, and to demonstrate fundamental patient-centered skills, that constitute the basis of safe and effective patient care.

5. Jurisdictions across the country rely upon the USMLE as part of their licensure process for ensuring the qualifications of prospective physicians.

6. There are three “Steps” to the USMLE, all of which must be passed before an individual with an M.D. degree is eligible to apply for an unrestricted license to practice medicine in the United States. Step 1 is a one-day, computer-based multiple-choice examination that assesses understanding and application of basic science concepts important to the practice of medicine. Step 2 has two components: Step 2 CK (Clinical Knowledge), and Step 2 CS (Clinical Skills). Step 2 CK is a one-day, computer-based multiple-choice examination that assesses the application of medical knowledge, skills, and understanding of clinical science for the provision of patient care under supervision. Step 2 CS uses standardized patients to assess an examinee’s ability to gather information from patients, perform physical examinations, and communicate his or her findings. Step 3 is a two-day, computer-based examination that assesses whether examinees can apply medical knowledge and understanding of biomedical and clinical science essential for the unsupervised practice of medicine.

7. The USMLE is administered under standard conditions, and NBME has policies and procedures in place that are intended to ensure that no examinee or group of examinees receives unfair advantage on the examination.

8. With limited exceptions, all examinees take the USMLE Step examinations under the same testing conditions, including standard testing time. The primary exception to this policy is for individuals with documented disabilities who demonstrate that they need reasonable accommodations to access the examination(s).

9. Testing accommodations are available on the USMLE for examinees with a disability, as defined under the Americans with Disabilities Act, as amended by the ADA Amendments Act of 2008 (“ADA”). All requests for accommodations are individually reviewed and, when warranted (*i.e.*, when the examinee demonstrates that he or she is disabled within the meaning of the ADA and needs reasonable accommodations to access the examination), reasonable and appropriate accommodations are provided. Accommodations are denied when the submitted documentation fails to demonstrate that the examinee has a disability within the meaning of the ADA or that the requested accommodations are needed for access to the examination. NBME does so to ensure that its testing program is fair for all examinees, and to protect the reliability of USMLE scores.

10. NBME often consults with independent professionals with expertise in the relevant disability. When it does so, NBME asks the external professional to review the supporting documentation submitted by the individual who has requested accommodations and provide a written report that evaluates whether it demonstrates the presence of an impairment (as identified by the candidate) and, if so, to make a recommendation on whether accommodations are warranted.

11. On October 14, 2013, NBME received a request from Brendan Berger for testing accommodations on USMLE Step 1 on the basis of learning disabilities in reading and writing and Attention-Deficit/Hyperactivity Disorder (“ADHD”). He requested 50% additional test time, extra break time, testing over two days, a distraction reduced setting, and a test reader or recording. The request form states he received 50% additional time in middle and high school and “individualized” accommodations in elementary school; 100% additional test time during his undergraduate studies at University of Cincinnati; 50% additional test time at American

University of the Caribbean School of Medicine; and 50% additional test time on the SAT and ACT. A true and correct copy of Mr. Berger's 2013 request form for Step 1 is attached at **Exhibit A**.

12. NBME thoroughly reviewed all documents submitted in support of Mr. Berger's request for test accommodations. It also provided Mr. Berger's file to an external reviewer, Benjamin Lovett, Ph.D., for review and recommendation. Dr. Lovett concluded as follows: "Considering all the evidence, in the context of these complexities, I believe that there is insufficient credible evidence of any disability conditions that would keep Mr. Berger from accessing Step 1 of the USMLE under standard administration conditions."

13. Following its review of Mr. Berger's request, and based on Dr. Lovett's recommendations and my independent review of the file, NBME concluded that Mr. Berger's documentation did not demonstrate a substantial limitation in a major life activity compared to most people or that his requested accommodations were an appropriate modification of his USMLE Step 1 test administration. NBME therefore denied Mr. Berger's request for accommodations. A true and correct copy of my December 23, 2013 letter to Mr. Berger in response to his accommodation request is attached at **Exhibit B**.

14. On March 28, 2014, Brendan Berger took Step 1 without accommodations and achieved a passing score. With a score of 198, Mr. Berger was 6 points above the minimum score needed to pass the exam, a 192.

15. In April 2015, NBME received a request from Mr. Berger for testing accommodations on USMLE Step 2 CK and Step 2 CS on the basis of learning disabilities in reading and writing and ADHD. He requested 50% additional test time, extra break time, testing over two days, a distraction reduced setting, and a "test reader or recording" for Step 2 CK and

two extra minutes per encounter and ten extra minutes per note for Step 2 CS. A true and correct copy of Mr. Berger's April 2015 request form for Step 2 is attached at **Exhibit C**.

16. NBME carefully reviewed Mr. Berger's request and all documents submitted in support of his request for testing accommodations for Step 2 CK and Step 2 CS. Based on my independent review of the file, NBME concluded that there was no new substantive information or evidence that warranted a different decision than the decision applicable to Step 1 as communicated in my December 23, 2013 letter to Mr. Berger. NBME therefore informed Mr. Berger by letter dated July 24, 2015 that he was not approved for accommodations. A true and correct copy of my July 24, 2015 letter to Mr. Berger is attached at **Exhibit D**.

17. On April 13, 2016, Mr. Berger took Step 2 CS without accommodations and did not achieve a passing score.

18. On August 17, 2016, Mr. Berger took Step 2 CS without accommodations and achieved a passing score.

19. On April 25, 2017, Mr. Berger took Step 2 CK without accommodations and did not achieve a passing score. With a score of 151, Mr. Berger was 58 points below the minimum score needed to pass the exam, a 209.

20. In February 2018, Mr. Berger, through his attorney, submitted another request for accommodations on Step 2 CK. This time, he sought 100% additional testing time in addition to extra break time, testing over two days, a distraction reduced test setting, and a test reader or recording on the basis of learning disabilities in reading and writing and ADHD. A true and correct copy of Mr. Berger's request is attached at **Exhibit E**.

21. NBME thoroughly reviewed all documents submitted in support of his request for test accommodations and also provided Mr. Berger's file to Dr. Benjamin Lovett for review and

recommendation. Dr. Lovett concluded “there is insufficient credible evidence to support the request.”

22. Following its review of Mr. Berger’s request, and based on Dr. Lovett’s recommendations and my independent review of the file, NBME concluded that Mr. Berger’s documentation did not demonstrate a substantial limitation in a major life activity compared to most people or that his requested accommodations were an appropriate modification of his USMLE Step 2 CK test administration. NBME therefore denied Mr. Berger’s request for testing accommodations. A true and correct copy of my May 27, 2018 letter to Mr. Berger in response to his accommodation request is attached at **Exhibit F**.

23. On August 31, 2018, Mr. Berger took Step 2 CK without accommodations and did not achieve a passing score. With a score of 166, Mr. Berger was 43 points below the minimum score needed to pass the exam, a 209.

24. After Mr. Berger filed this lawsuit, NBME sought the opinion of an additional external reviewer, Samuel Ortiz, Ph.D., to consider whether Mr. Berger has learning disabilities that would warrant accommodations. Dr. Ortiz provided the following opinion:

In short, Mr. Berger’s current reading and writing issues, and their relation to his taking a timed test, are not attributable to a learning disability but instead represent the early effects of a language difference. Whatever difficulties Mr. Berger may have at present in completing timed tests cannot be viewed or attributed to the presence of a learning impairment in reading or written expression.... Because the effect of bilingualism is neither compatible with the definition of disability and does not constitute the basis for establishing one, it is my considered opinion that a diagnosis of learning impairment in reading or written expression is wholly unsupported and that Mr. Berger’s request for accommodation on Step 2-CK remains unwarranted and should therefore be denied.

25. Under standard testing conditions, Step 1 is a one-day examination, divided into seven 60-minute blocks and administered in one 8-hour testing session. The number of questions

per block on a given examination form may vary but will not exceed 40. The total number of items on the overall examination form will not exceed 280. Attached as **Exhibit G** are true and correct copies of sample practice questions for the Step 1 exam that NBME makes available on its website.

26. Under standard testing conditions, Step 2 CK is a one-day examination, divided into eight 60-minute blocks and administered in one 9-hour testing session. The number of questions per block on a given examination will vary but will not exceed 40. The total number of items on the overall examination will not exceed 318. Attached as **Exhibit H** are true and correct copies of sample practice questions for the Step 2 CK exam that NBME makes available on its website.

27. As noted previously, Step 1 and Step 2 CK are both multiple-choice examinations, taken on a computer. There is no writing component for either exam.

28. Birth dates and social security numbers have been redacted from the attached documents.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on July 24, 2019


Catherine Farmer

Exhibit A



27 Creekwood Square
Cincinnati, OH 45246
October 3, 2013

USMLE Disability Services
National Board of Medical Examiners
3750 Market Street
Philadelphia, PA 19104-3190

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Dear Reader:

Disability Services

I have been diagnosed with a learning disability for written language, affecting reading and writing, and completion of written tests like the USMLE. I also have secondary difficulties due to ADD that are unremediated by medication because of negative side effects with limited if any benefit. I am therefore petitioning for accommodations on the USMLE Step 1. I am including the report from a recent psycho-educational re-evaluation which includes an Appendix with historical documents regarding childhood diagnosis and a lifetime history of accommodations to mediate the impact of the learning and attention problems.

My written language processing deficits manifest both in reading and writing. In effect, this decreases my reading comprehension speed and similarly proves problematic in essay composition and written math computing. Due to such processing delays, completion of test sections within the standard time allowed has not been and will not be possible. Therefore, I am requesting that an accommodation of *at least* the standard time and a half (50% extra time) be allowed for me to complete all sections of the USMLE.

I feel that I have a very strong body of documentation of my disability with academic and test-taking accommodations dating back to age 6. I have a long personal history of dealing with my disability and I am merely asking now for what I genuinely need to have fair access to test questions. When provided with the accommodations I need for test taking, I have been successful in meeting my personal goals.

In the first grade, I was already having difficulty with reading and writing. I made little progress with the *whole-language approach* that was used at my school and I was often unable to finish written assignments in the amount of class time our teacher had allotted, although the other students managed without difficulty. When I did not finish, I was sent down to *the boiler room* where some desks were kept for the "bad" students who did not do their homework. This meant that I would be required to work through recess almost daily until I had finished my assignment. (Even with this extra time, I was sometimes unable to reach this goal in this type of setting due to the distracting noises of classes entering and leaving the cafeteria which resounded through the doorway near where I sat.) As a child, I was confused by the fact that even though I did my homework every evening I was being placed in the same group as the kids who were "slackers" and had chosen not to do their homework before coming to school. I felt frustrated because, despite working continuously, I was unable to speed up my reading and writing while I was in class and was being punished for something I could not control. I was further confused by the fact that I was in the Science Enrichment pull-out program for gifted students and did well in that class.

I had great difficulty making friends and felt ostracized by the other students. They viewed me as someone to be avoided, since I was singled out every day by my teacher in this negative way and missed recess. Due to these negative experiences and the fact that I was not able to read at the end of 1st grade despite working with a private reading tutor at home after school during that year, my parents decided to home-school me. My mother dedicated 3 ½ solid years to teaching me how to read using phonics and at the end of that time returned me to regular school for 5th grade.

Obviously homeschooling meant missed opportunities for socialization and my parents had me join a neighborhood Boy Scout Troop so that I would know some of my school mates when I went back to school and wouldn't be socially ostracized. Compensations for my disability have also led to other problems of a social nature, such as the fact that I tried to live with another person but was unable to live with a room mate during college; I tried again during medical school, but again found it impossible because of my need for absolute silence in order to maintain focus during study.

There have been other examples of compensating techniques regarding my slow reading pace in my daily life. For example, in church – if there is congregational participation in choral readings – such as the Palm Sunday Passion of Christ re-enactment – I do not read the passages out loud with the congregation, because I can't keep up with the crowd's reading speed. I have memorized ordinary liturgical responses in order to participate in Sunday services.

Also, when I was working in research recently, I was given articles that outlined the molecular biology lab techniques that I was expected to read before having a co-worker teach me the actual technique. As usual, I was only able to read a fraction of the material before I was expected to have completed it and subsequently observe a co-worker perform the technique. This meant that I needed to memorize everything on the spot, without the benefit of having read through the technique once already. Luckily, I have a good memory and was usually able to memorize enough the first time through so that the second time, when I was expected to perform the given technique by myself I was usually successful. However, this sometimes put me in situations where I was unaware of something crucial and that led to problems.

It is true that I have developed many ways to compensate for my disability, such as spending more time on reading or learning through talking to others. But **none** of these are available to me when I take a standardized test like the USMLE. In fact, when I took the MCAT under standard time conditions, I did not have time to read many of the passages and questions toward the end of all sections, and so I marked answers randomly. This approach would never do for the USMLE with its clinical vignettes. Disability accommodations, especially extended time for test completion, are the only way that I can overcome this difficulty and have a fair chance for the USMLE score to accurately reflect what I am able to bring to the practice of medicine and offer the world through patient care.

I thank you for your consideration of this matter.

Sincerely,



Brendan J. Berger

(513) 444-3568

brendanberger@gmail.com

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Disability Services



United States Medical Licensing Examination® (USMLE®)

REQUEST FOR TEST ACCOMMODATIONS

Use this form if you have never received test accommodations for USMLE

The National Board of Medical Examiners® (NBME®) processes requests for test accommodations on behalf of the USMLE program

If you have a documented disability covered under the Americans with Disabilities Act (ADA), you must notify the USMLE in writing each time you apply for a Step examination for which you require test accommodations. Submitting this form constitutes your official notification.

- Review the USMLE Guidelines for Test Accommodations at www.usmle.org for a detailed description of how to document a need for accommodation.
- Complete all sections of this form and submit it together with all required documentation.
- Incomplete, illegible, or unsigned request forms and/or insufficient supporting documentation will delay processing of your request.
- Do not send originals. Please retain the originals of all documentation that you submit as we are unable to return submissions.
- Submitting duplicate and/or bound documentation may delay processing of your request.
- Requests are processed in the order in which they are received.
- NBME will acknowledge receipt of your request and audit your submission for completeness. You may be asked to submit additional documentation to complete your request.
- Allow at least 60 days for processing of your request. Processing cannot begin until sufficient information is received by NBME.
- The outcome of our review will not be released via telephone. All official communications regarding your request will be made in writing. If you wish to modify or withdraw a request for test accommodations, contact Disability Services by e-mail at disabilityservices@nbme.org or by telephone at 215-590-9700.

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Disability Services

You MUST provide supporting documentation verifying your current functional impairment.

- ☐ In order to document your need for accommodation, submit the following with this form:
- ✓ A personal statement describing your disability and its impact on your daily life and educational functioning.
 - ✓ Supporting documentation such as psychoeducational evaluations; medical records; copies of report cards, academic and score transcripts; faculty or supervisor feedback; job performance evaluations; clerkship/clinical course evaluations; verification of prior academic/test accommodations; etc.
 - ✓ A complete and comprehensive evaluation. Reports from qualified professionals must be typewritten on letterhead, signed and include their professional qualifications.

Section C: Accommodations Information

C1. Do you require wheelchair access at the examination facility? ☐ Yes ☒ No

If yes, and you require an adjustable height computer table, indicate the number of inches required from the bottom of the table to the floor: _____

C2. Describe the accommodation(s) you are requesting. Accommodations must be appropriate to the impairment within the context of the examination task and setting:

50% additional testing time, extra break time, 2 day administration, test reader or recording,
distraction limited setting; need extra time and quiet for reading comprehension, concentration and reasoning

C3. If you are requesting additional break or extended testing time, check the appropriate box below.

STEP 1:**Additional Break Time**

- ☐ Additional break time over 1 day
☒ Additional break time over 2 days

Additional Testing Time

- ☐ 25% Additional test time (Time and 1/4) over 2 days
☒ 50% Additional test time (Time and 1/2) over 2 days
☐ 100% Additional test time (Double time) over 2 days

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STEP 2 CK:**Additional Break Time**

- ☐ Additional break time over 2 days

Additional Testing Time

- ☐ 25% Additional test time (Time and 1/4) over 2 days
☐ 50% Additional test time (Time and 1/2) over 2 days
☐ 100% Additional test time (Double time) over 2 days

Disability Services

STEP 3:**Additional Break Time**

- ☐ Additional break time over 2 days
☐ Additional break time over 4 days

Additional Testing Time

- ☐ 25% Additional test time (Time and 1/4) over 3 days
☐ 50% Additional test time (Time and 1/2) over 3 days
☐ 100% Additional test time (Double time) over 4 days

STEP 2 CS:

For each section of Step 2 CS you believe is affected by a disability (i.e., patient encounter, patient note), describe the accommodations you are requesting. If you are requesting additional time, state the amount of additional time you require in minutes per encounter/note.

☐ Patient Encounter: _____

☐ Patient Note: _____

Section D: Information about Your Impairment

D1. Check the box that best describes the nature of your impairment. Write the year it was first professionally diagnosed. Select those for which you are requesting accommodations.

Sensory☐ Hearing☐ Vision☐ Other (specify): _____**Year first diagnosed**

Learning☒ Reading

1992

☒ Writing

1992

☐ Mathematics☐ Other (specify): _____

Language☐ Expressive☐ Receptive☐ Other (specify): _____

Physical☐ Mobility/motor☐ Endocrine☐ Neurological☐ Other (specify): _____

Psychiatric☐ Anxiety Disorder☐ Depression/Mood Disorder☒ Attention Deficit/Hyperactivity Disorder

1994

☐ Other (specify): _____

Other Impairment (specify) _____

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D2. List your current DSM/ICD diagnosis/diagnoses for which you are requesting accommodations:

315.00 Reading Disorder, Severe

315.20 Disorder of Written Expression, Severe

314.00 ADHD, Inattentive Type, Moderate

D3. Personal Statement

- Attach a signed and dated personal statement describing your impairments(s) and their impact on daily life.** Narratives should not be confined to standardized test performance. The personal statement is your opportunity to tell us how your physical or mental impairment(s) substantially limit your current functioning in a major life activity. In your own words, discuss how your impairment(s) would interfere with your access to the relevant USMLE Step and how the specific accommodation(s) you are requesting will alleviate this impact.

Section E: Accommodation History**STANDARDIZED EXAMINATIONS**

E1. List accommodations you received for all standardized examinations such as college, graduate and professional school admissions tests and professional licensure and certification examinations. If no accommodations were provided, write NONE.

- ☞ **Attach copies of official documentation from each testing agency confirming the test accommodations they provided as well as a copy of your official score report(s).**

	DATE(S) ADMINISTERED	ACCOMMODATION(S) PROVIDED
<input checked="" type="checkbox"/> SAT®, ACT®	2004	50% extra time, distraction limited setting
<input checked="" type="checkbox"/> MCAT®	2009, 2010	None
<input type="checkbox"/> GRE®		
<input type="checkbox"/> GMAT®		
<input type="checkbox"/> LSAT®		
<input type="checkbox"/> DAT®		
<input type="checkbox"/> COMLEX®		
<input type="checkbox"/> Bar Examination(s)		
<input type="checkbox"/> Other(s)		

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Disability Services

POSTSECONDARY EDUCATION

E2. List each school and all formal accommodations you receive/received, and the dates accommodations were provided:

	SCHOOL	ACCOMMODATIONS PROVIDED	DATES PROVIDED
Medical/Graduate/ Professional School	American University	50% extra time for tests	2011 to Present
	of the Caribbean	Distraction Limited Test Setting	
Undergraduate School	University of Cincinnati	100% extra time for tests	2004 to 2009
		Distraction Limited Test Setting, Priority Registration, Recorded Text Material, Computer for Essay Tests, Writing and Proof Read Assistance	

E3. Certification of Prior Test Accommodations

- ☞ **If you receive/received accommodations in medical school and/or residency, the appropriate official at your medical school/residency must complete and submit the Certification of Prior Test Accommodations form available at www.usmle.org.**

PRIMARY AND SECONDARY SCHOOL

E4. List each school and all formal accommodations you received, and the dates accommodations were provided:

- **Attach copies of official records from the school(s) listed confirming the accommodations they provided.**

	SCHOOL	ACCOMMODATIONS PROVIDED	DATES PROVIDED
High School	Archbishop Moeller HS	50% extra time for tests	2000-2004
	Distraction Limited Test Setting, Audlobooks, Reader/Scribe, Reading/Writing Assist Informal until 2003 Service Plan.		
Middle School	St. Gabriel Consolidated	50% extra time for tests, oral testing	1996-2000
	Distraction Limited Setting, Exams Read Aloud, Reader/Scribe for Assignments and PRN extra time for Assignments		
Elementary School	Home Schooling	Individualized Format	1993-1996
	Remediating Severe Reading and Writing Delay. Mother is a licensed teacher. Glendale Public School Offered Remedial Reading, but Family opted for Private Resources 1991-1993		

Section F: Certification and Authorization

To the best of my knowledge and belief, the information recorded on this request form is true and accurate. I understand that my request for accommodations, including this form and all supporting documentation, will be received by the NBME sufficiently in advance of my anticipated test date in order to provide adequate time to evaluate and process my request.

I acknowledge and agree that any information submitted by me or on my behalf may be used by the USMLE program for the following purposes:

- Evaluating my eligibility for accommodations. When appropriate, my information may be disclosed to qualified independent reviewers for this purpose.
- Conducting research. Any disclosure of my information by the USMLE program will not contain information that could be used to identify me individually; information that is presented in research publications will be reported only in the aggregate.

I authorize the National Board of Medical Examiners (NBME) to contact the entities identified in this request form, and the professionals identified in the documentation I am submitting in connection with it, to obtain further information. I authorize such entities and professionals to provide NBME with all requested further information.

For Step 3 applicants: I authorize the release of any documentation or information relating to my current or prior request(s) for test accommodations for USMLE Step(s) to the medical licensing authority or its designee for purposes of rendering a decision regarding my eligibility for accommodations on Step 3.

I further understand that the USMLE reserves the right to take action, as described in the Bulletin of Information (see "Indeterminate Scores and Irregular Behavior"), if it determines that false information or false statements have been presented on this request form or in connection with my request for test accommodations.

Name (print): Brendan Berger

Signature: 

Date: October 2nd 2013

Exhibit B



National Board of Medical Examiners
3750 Market Street
Philadelphia, PA 19104-3102

215-590-9500 phone
www.nbme.org

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December 23, 2013

Brendan James Berger
27 Creekwood Square
Cincinnati, OH 45246

RE: USMLE Step 1

USMLE ID#: 0-893-419-2

Dear Mr. Berger:

We have thoroughly reviewed the documentation provided in support of your request for test accommodations for the United States Medical Licensing Examination (USMLE) Step 1. We conducted an individualized review of your request in accordance with the guidelines set forth in the Americans with Disabilities Act (ADA).

You report the basis of your request for accommodations to be reading disorder and disorder of written expression diagnosed in 1992 and Attention Deficit/Hyperactivity Disorder (ADHD) diagnosed in 1994. You write, *"I have been diagnosed with a learning disability for written language, affecting reading and writing, and completion of written tests like the USMLE. I also have secondary difficulties due to ADD that are unremediated by medication because of negative side effects with limited if any benefit...My written language processing deficits manifest both in reading and writing. In effect, this decreases my reading comprehension speed and similarly proves problematic in essay composition and written math computing. Due to such processing delays, completion of test sections within the standard time allowed has not been and will not be possible."*

The most current clinical documentation provided was a July, 2013 report of Psychological and Educational Re-evaluation conducted when you were a 27-year-old second year medical student at American University of the Caribbean School of Medicine. Cheryl M. Beach, Ph.D. writes that you have a severe language-based learning disability as well as a moderate attention disorder with inattentive features, both diagnosed during very early childhood. She reports, *"The present assessment results are consistent with his lifelong history, showing substantial functional impairment, relative to the average person, in the ability to perform activities involving reading comprehension, and to complete the process within a standard time limit that offers fair access to the average adult."* Dr. Beach concludes, *"Brendan needs more time to complete written tests, compared to most adults, in order to have the same opportunity as the average person to accurately identify individual words, organize the information about word meanings in working memory, to re-read to refresh information in working memory, to comprehend test question meaning."*

The conclusions of your evaluator notwithstanding, your prior evaluation reports showed average or above average scores in reading and writing. In a February, 2003 report of Psychoeducational Evaluation conducted when you were a 17-year old student at Moeller High School, Alexander Smith, Ed.D. writes that you were referred for evaluation because you "experienced considerable difficulty with timed tests" and to document any deficits that may need appropriate accommodation for college entrance tests, and to further develop remediation strategies. In 2003, your performances on the *Wechsler Adult Intelligence Scale, Third Edition (WAIS-III)* and the *Wechsler Individual Achievement Test, Second Edition (WIAT-II)*

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were well within the Average range. Dr. Smith concluded that the discrepancy scores did not meet the State of Ohio educational guidelines for a disability and the Moeller committee meeting with the psychologist from the Princeton Schools determined that there was no need for special education assistance. Nevertheless, he offers a suggested diagnosis of Learning Disorder of Written Language.

In a July, 2008 report of Psychoeducational Re-evaluation conducted when you were a 23-year-old college senior seeking accommodations on the MCAT, Alexander H. Smith, Ed.D. writes, "*While his score for written language score [sic] falls within the average range, it is in the low end, barely within a standard deviation of the mean.*" Your 2008 performances on a range of cognitive and academic tasks, including processing speed, reading, and writing, were well within the average range and do not demonstrate impaired functioning. Average range reading and writing skills, no matter how discrepant from one's IQ, are by definition average and do not demonstrate impairment. Dr. Smith did not assign a diagnosis of ADHD but listed it as a rule out.

A March, 2010 Addendum to Psycho-educational Evaluation for MCAT Accommodations was conducted by Dr. Smith after you had taken the MCAT without accommodations. Your 2010 performances on the *Woodcock-Johnson III (WJ-III)* were generally within the Average range, including Basic Reading skills better than 70% of a national sample of same age peers and Broad Reading skills better than 60% of age peers. These data do not demonstrate impairments that limit a major life activity.

Regarding your performances on timed standardized tests, Dr. Smith reports in 2003 that you obtained a PSAT score better than 77% of same grade peers. The records provided show that you earned MCAT scores of 24M and 25M under standard conditions, better than 38-50.9% of a highly select group of medical school applicants. These data do not demonstrate impairments that impact your ability to take Step 1 under standard testing conditions.

Accommodations are intended to provide access to the USMLE testing program for individuals with a documented disability as defined by the ADA. A diagnostic label, in and of itself, does not establish coverage under the ADA, nor does prior receipt of accommodations for a particular activity guarantee that identical accommodations are indicated or will be available in all future settings and circumstances. The ADA covers individuals who are substantially limited in a major life activity. Determination of whether an individual is substantially limited in functioning as compared to most people is based on assessment of the current impact of the identified impairment.

Your documentation does not demonstrate that you are currently substantially limited in a major life activity as compared to most people or that provision of extended testing time, additional break time, audio rendition, and a separate testing room is an appropriate modification of your USMLE Step 1 test administration. Therefore, after a thorough review of all of your documentation, I must inform you that we are unable to provide you with the requested accommodations.

We will request processing of your exam application without test accommodations. You may inquire at permits@ecfmg.org or call Applicant Information Services at (215) 386-5900 with any questions about your scheduling permit.

Sincerely,



Catherine Farmer, Psy.D.
Director, Disability Services
ADA Compliance Officer, Testing Programs

Exhibit C



United States Medical Licensing Examination® (USMLE®)

REQUEST FOR TEST ACCOMMODATIONS

Use this form if you have never received test accommodations for USMLE

The National Board of Medical Examiners® (NBME®) processes requests for test accommodations on behalf of the USMLE program

If you have a documented disability covered under the Americans with Disabilities Act (ADA), you must notify the USMLE in writing each time you apply for a Step examination for which you require test accommodations. Submitting this form constitutes your official notification.

- Review the USMLE Guidelines for Test Accommodations at www.usmle.org for a detailed description of how to document a need for accommodation.
- Complete all sections of this form and submit it together with all required documentation.
- Incomplete, illegible, or unsigned request forms and/or insufficient supporting documentation will delay processing of your request.
- Do not send originals. Please retain the originals of all documentation that you submit as we are unable to return submissions.
- Submitting duplicate and/or bound documentation may delay processing of your request.
- Requests are processed in the order in which they are received.
- NBME will acknowledge receipt of your request and audit your submission for completeness. You may be asked to submit additional documentation to complete your request.
- Allow at least 60 days for processing of your request. Processing cannot begin until sufficient information is received by NBME.
- The outcome of our review will not be released via telephone. All official communications regarding your request will be made in writing. If you wish to modify or withdraw a request for test accommodations, contact Disability Services by e-mail at disabilityservices@nbme.org or by telephone at 215-590-9700.

You MUST provide supporting documentation verifying your current functional impairment.

 In order to document your need for accommodation, submit the following with this form:

- ✓ A personal statement describing your disability and its impact on your daily life and educational functioning.
- ✓ Supporting documentation such as psychoeducational evaluations; medical records; copies of report cards, academic and score transcripts; faculty or supervisor feedback; job performance evaluations; clerkship/clinical course evaluations; verification of prior academic/test accommodations; etc.
- ✓ A complete and comprehensive evaluation. Reports from qualified professionals must be typewritten on letterhead, signed and include their professional qualifications.

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Section C: Accommodations Information

C1. Do you require wheelchair access at the examination facility? ☐ Yes ☒ No

If yes, and you require an adjustable height computer table, indicate the number of inches required from the bottom of the table to the floor: _____

C2. Describe the accommodation(s) you are requesting. Accommodations must be appropriate to the impairment within the context of the examination task and setting:

50% additional testing time, extra break time, 2 day administration, test reader or recording,
distraction limited setting; need extra time and quiet for reading comprehension, concentration and reasoning

C3. If you are requesting additional break or extended testing time, check the appropriate box below.

STEP 1:**Additional Break Time**

☐ Additional break time over 1 day

☐ Additional break time over 2 days

Additional Testing Time

☐ 25% Additional test time (Time and 1/4) over 2 days

☐ 50% Additional test time (Time and 1/2) over 2 days

☐ 100% Additional test time (Double time) over 2 days

STEP 2 CK:**Additional Break Time**

☒ Additional break time over 2 days

Additional Testing Time

☐ 25% Additional test time (Time and 1/4) over 2 days

☒ 50% Additional test time (Time and 1/2) over 2 days

☐ 100% Additional test time (Double time) over 2 days

STEP 3:**Additional Break Time**

☐ Additional break time over 2 days

☐ Additional break time over 4 days

Additional Testing Time

☐ 25% Additional test time (Time and 1/4) over 3 days

☐ 50% Additional test time (Time and 1/2) over 3 days

☐ 100% Additional test time (Double time) over 4 days

STEP 2 CS:

For each section of Step 2 CS you believe is affected by a disability (i.e., patient encounter, patient note), describe the accommodations you are requesting. If you are requesting additional time, state the **amount** of additional time you require in **minutes per encounter/note**.

☒ Patient Encounter: 2 extra minutes per encounter

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☒ Patient Note: 10 extra minutes per note

APR 03 2015

Disability Services

Section D: Information about Your Impairment

D1. Check the box that best describes the **nature of your impairment**. Write the **year** it was first professionally diagnosed. Select those for which you are requesting accommodations.

Sensory☐ Hearing☐ Vision☐ Other (specify): _____**Year first diagnosed**

Learning☒ Reading

1992

☒ Writing

1992

☐ Mathematics☐ Other (specify): _____

Language☐ Expressive☐ Receptive☐ Other (specify): _____

Physical☐ Mobility/motor☐ Endocrine☐ Neurological☐ Other (specify): _____

Psychiatric☐ Anxiety Disorder☐ Depression/Mood Disorder☒ Attention Deficit/Hyperactivity Disorder

1994

☐ Other (specify): _____

Other Impairment (specify) _____

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Disability Services

D2. List your **current DSM/ICD** diagnosis/diagnoses for which you are requesting accommodations:

315.00 Reading Disorder, Severe

315.20 Disorder of Written Expression, Severe

314.00 ADHD, Inattentive Type, Moderate

D3. Personal Statement

Attach a signed and dated personal statement describing your impairments(s) and their impact on daily life. Narratives should not be confined to standardized test performance. The personal statement is your opportunity to tell us how your physical or mental impairment(s) substantially limit your current functioning in a major life activity. In your own words, discuss how your impairment(s) would interfere with your access to the relevant USMLE Step and how the specific accommodation(s) you are requesting will alleviate this impact.

Section E: Accommodation History**STANDARDIZED EXAMINATIONS**

E1. List accommodations you received for all standardized examinations such as college, graduate and professional school admissions tests and professional licensure and certification examinations. If no accommodations were provided, write NONE.

- ☞ **Attach copies of official documentation from each testing agency confirming the test accommodations they provided as well as a copy of your official score report(s).**

	DATE(S) ADMINISTERED	ACCOMMODATION(S) PROVIDED
<input checked="" type="checkbox"/> SAT [®] , ACT [®]	2004	50% extra time, distraction limited setting
<input checked="" type="checkbox"/> MCAT [®]	2009, 2010	None
<input type="checkbox"/> GRE [®]		
<input type="checkbox"/> GMAT [®]		
<input type="checkbox"/> LSAT [®]		
<input type="checkbox"/> DAT [®]		
<input type="checkbox"/> COMLEX [®]		
<input type="checkbox"/> Bar Examination(s)		
<input checked="" type="checkbox"/> Other(s) <u>SHELF</u>	2014-2015	50% extra time, distraction limited setting

POSTSECONDARY EDUCATION

E2. List each school and all formal accommodations you receive/received, and the dates accommodations were provided:

	SCHOOL	ACCOMMODATIONS PROVIDED	DATES PROVIDED
Medical/Graduate/ Professional School	American University	50% extra time for tests	2011 to Present
	of the Caribbean	Distraction Limited Test Setting	
Undergraduate School	University of Cincinnati	100% extra time for tests	2004 to 2009
		Distraction Limited Test Setting, Priority Registration,	
		Recorded Text Material, Computer for Essay Tests, Writing and Proof Read Assistance	

E3. Certification of Prior Test Accommodations

- ☞ **If you receive/received accommodations in medical school and/or residency, the appropriate official at your medical school/residency must complete and submit the Certification of Prior Test Accommodations form available at www.usmle.org.**

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APR 03 2015

Page 5

Disability Services

PRIMARY AND SECONDARY SCHOOL

E4. List each school and all formal accommodations you received, and the dates accommodations were provided:

- ☒ **Attach copies of official records from the school(s) listed confirming the accommodations they provided.**

	SCHOOL	ACCOMMODATIONS PROVIDED	DATES PROVIDED
High School	Archbishop Moeller HS	50% extra time for tests	2000-2004
	Distraction Limited Test Setting, Audiobooks, Reader/Scribe, Reading/Writing Assist Informal until 2003 Service Plan.		
Middle School	St. Gabriel Consolidated	50% extra time for tests, oral testing	1996-2000
	Distraction Limited Setting, Exams Read Aloud, Reader/Scribe for Assignments and PRN extra time for Assignments		
Elementary School	Home Schooling	Individualized Format	1993-1996
	Remediating Severe Reading and Writing Delay. Mother is a licensed teacher. Glendale Public School Offered Remedial Reading, but Family opted for Private Resources 1991-1993		

Section F: Certification and Authorization

To the best of my knowledge and belief, the information recorded on this request form is true and accurate. I understand that my request for accommodations, including this form and all supporting documentation, must be received by the NBME sufficiently in advance of my anticipated test date in order to provide adequate time to evaluate and process my request.

I acknowledge and agree that any information submitted by me or on my behalf may be used by the USMLE program for the following purposes:

- Evaluating my eligibility for accommodations. When appropriate, my information may be disclosed to qualified independent reviewers for this purpose.
- Conducting research. Any disclosure of my information by the USMLE program will not contain information that could be used to identify me individually; information that is presented in research publications will be reported only in the aggregate.

I authorize the National Board of Medical Examiners (NBME) to contact the entities identified in this request form, and the professionals identified in the documentation I am submitting in connection with it, to obtain further information. I authorize such entities and professionals to provide NBME with all requested further information.

For Step 3 applicants: I authorize the release of any documentation or information relating to my current or prior request(s) for test accommodations for USMLE Step(s) to the medical licensing authority or its designee for purposes of rendering a decision regarding my eligibility for accommodations on Step 3.

I further understand that the USMLE reserves the right to take action, as described in the Bulletin of Information (see "Indeterminate Scores and Irregular Behavior"), if it determines that false information or false statements have been presented on this request form or in connection with my request for test accommodations.

Name (print): Brendan Berger

Signature: 

Date: March 17th 2015

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APR 03 2015

USMLE® Request for Test Accommodations

Disability Services

Exhibit D



National Board of Medical Examiners
3750 Market Street
Philadelphia, PA 19104-3102

215-590-9500 phone
www.nbme.org

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July 24, 2015



Brendan James Berger
27 Creekwood Square
Cincinnati, OH 45246

RE: USMLE Step 2 CK and Step 2 CS

USMLE ID#: 0-893-419-2

Dear Mr. Berger:

We have thoroughly reviewed the documentation provided in support of your request for test accommodations for the United States Medical Licensing Examination (USMLE) Step 2 Clinical Knowledge (CK) and Step 2 Clinical Skills (CS). We conducted an individualized review of your request in accordance with the guidelines set forth in the Americans with Disabilities Act (ADA).

You report the basis of your request to be a severe Reading and Writing Disorder diagnosed in 1992 and Attention-Deficit/Hyperactivity Disorder (ADHD) diagnosed in 1994. You write in your personal statement, *"My written language processing deficits manifest both in reading and writing. In effect, this decreases my reading comprehension speed and similarly proves problematic in essay composition and written math computing. Due to such processing delays, completion of test sections within the standard time allowed has not been and will not be possible."*

Received with your request was a 24-page letter from Cheryl M. Beach, Ph.D. dated January 29, 2015 including an integrative summary dating back to early childhood, an updated clinically based assessment, a review of academic and standardized test records since your 2013 evaluation, and a clinical interview. In addition, Dr. Beach writes that she asked you about the impact of reading and writing dysfluency on your ability to meet expectations for reading a patient history, taking notes during a patient encounter, and charting. Dr. Beach writes, *"The intent is to provide the NBME with additional information to consider in determining impairment and the need for USMLE-2 accommodation."* Your evaluator concludes, *"...there is an exceptionally well-documented lifelong history showing the pervasive impact of a disability resulting from a severe, early-childhood diagnosed language-based learning disability with dyslexia, and AD/HD. There is a comprehensively documented, lifelong history of being regarded as an individual who has a severe disability involving reading, writing, and AD/HD symptoms, and being granted disability learning and test-taking support, modifications, and accommodations to mediate the impact of the disability in the academic setting, from kindergarten through medical school...Although he was denied accommodations for Step 1, he is requesting NBME consider the request for Step 2 accommodations on the basis that he needs more time to comprehend the more reading-intensive test items of the SHelf and Step 2 exams, compared to Step 1 and MCAT...He has demonstrated successful methods for managing the*

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impact of symptoms in the daily living setting; he has also demonstrated this in the practice setting during his medical education and clinical training. He has a well-developed repertoire of study techniques and systematic routines that allow him to learn and perform his work very effectively... There is no indication that the disability would restrict professional functioning." She recommends 50% additional testing time, an audio recording of the exam, additional rest breaks, and a private room for Step 2 CK and double time for writing clinical notes for Step 2 CS.

Requests for test accommodations are thoroughly reviewed on an individual, case-by-case basis. NBME carefully considers all evidence in determining whether an individual is substantially limited within the meaning of the ADA, including the individual's personal statement; testimonials and clinical reports; and objective information such as school records and scores obtain on high stakes tests taken with and without accommodations.

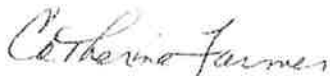
Supporting documentation submitted from qualified professionals is a necessary part of any request for accommodations and is carefully reviewed by the NBME. Though not required to defer to the conclusions or recommendations of an applicant's supporting professional, we carefully consider the recommendation of qualified professionals made in accordance with generally accepted diagnostic criteria and supported by reasonable documentation.

Our review of your recent submission found no new substantive information or evidence to demonstrate that the provision of additional testing time, additional break time, an audio rendition, and a separate testing room is an appropriate modification of your USMLE Step 2 CK test administration. Please see my December 23, 2013 letter for more detailed information.

As you know, Step 2 CS is a different format from Step 1 and Step 2 CK and requires very little reading. The October 15, 2013 *Certification of Prior Test Accommodations* signed by Jeff Jarosinski, Ph.D. Assistant Dean of Student Affairs at AUC indicates that your medical school does not provide you any accommodations for clinical skills examinations. Overall, your documentation does not demonstrate that additional testing time is an appropriate modification of your Step 2 CS test administration. Therefore, after a thorough review of all of your documentation, I must inform you that we are unable to provide you with the requested accommodations.

We will request processing of your exam application without test accommodations. You may inquire at permits@ecfmg.org or call Applicant Information Services at (215) 386-5900 with any questions about your scheduling permits.

Sincerely,



Catherine Farmer, Psy.D.
Director, Disability Services
ADA Compliance Officer, Testing Programs

Exhibit E

1123266 0-893-419-2
Updated-Step 2 CK Request

United States Medical Licensing Examination®

REQUEST FOR TEST ACCOMMODATIONS*Use this form if you are requesting accommodations on USMLE for the first time*

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The National Board of Medical Examiners® (NBME®) processes requests for test accommodations on behalf of the USMLE program

MAR 02 2018
Disability Services

If you have a documented disability covered under the Americans with Disabilities Act (ADA), you must notify the USMLE in writing each time you apply for a Step examination for which you require test accommodations. Submitting this form constitutes your official notification.

- Review the USMLE Guidelines for Test Accommodations at www.usmle.org for a detailed description of how to document a need for accommodations.
- Complete all sections of this request form; submit the form and all required documentation to Disability Services once you have submitted your Step exam application to your registration entity.
- NBME will acknowledge receipt of your request by e-mail and audit your submission for completeness. If you do not receive an e-mail acknowledgement within two business days of submitting your request, please contact Disability Services at 215-590-9700 or disabilityservices@nbme.org. You may be asked to submit additional documentation to complete your request.
- Requests are processed in the order in which they are received. Processing cannot begin until sufficient information is received by NBME **and** your Step exam registration is complete. Please allow at least 60 days for processing of your request.
- The outcome of our review will not be released via telephone. All official communications regarding your request will be made in writing. If you wish to modify or withdraw a request for test accommodations, contact Disability Services by e-mail at disabilityservices@nbme.org or by telephone at 215-590-9700.

As explained in the Guidelines to Request Test Accommodations (www.usmle.org), you MUST provide supporting documentation verifying your current functional impairment.

Submit the following with this form:

- ✓ A **personal statement** describing your disability and its impact on your daily life and educational functioning.
- ✓ A **complete and comprehensive evaluation** from a qualified professional documenting your disability.
- ✓ **Supporting documentation** such as academic records; score transcripts for previous standardized exams; verification of prior academic/test accommodations; relevant medical records; previous psycho-educational evaluations; faculty or supervisor feedback; job performance evaluations; clerkship/clinical course evaluations; etc.

Please be sure to review the Guidelines for more detailed information regarding supporting documentation.

USMLE® Request for Test Accommodations

Section C: Accommodations Information

C1. Step 1, Step 2 CK, or Step 3 (computer-based examinations)

Check the appropriate box to indicate the accommodations you are requesting. Check **ONLY ONE** box for the exam(s) for which you are currently registered:

STEP 1:**Additional Break Time**

- ☐ Additional break time over 1 day
☐ Additional break time over 2 days

Additional Testing Time

- ☐ 25% Additional test time (Time and 1/4) over 2 days
☐ 50% Additional test time (Time and 1/2) over 2 days
☐ 100% Additional test time (Double time) over 2 days
☐ Additional break time and 50% Additional test time (Time and 1/2) over 2 days

STEP 2 CK:**Additional Break Time**

- ☐ Additional break time over 2 days

Additional Testing Time

- ☐ 25% Additional test time (Time and 1/4) over 2 days
☐ 50% Additional test time (Time and 1/2) over 2 days
☒ 100% Additional test time (Double time) over 2 days
☐ Additional break time and 50% Additional test time (Time and 1/2) over 2 days

STEP 3:**Additional Break Time**

- ☐ Additional break time over 4 days

Additional Testing Time

- ☐ 25% Additional test time (Time and 1/4) over 3 days
☐ 50% Additional test time (Time and 1/2) over 4 days
☐ 100% Additional test time (Double time) over 5 days
☐ Additional break time and 50% Additional test time (Time and 1/2) over 4 days

Describe any other accommodation(s) you are requesting for **Step 1, Step 2 CK, or Step 3.**

Test reader or recording, extra break time, 2 day administration, distraction limited setting.

I need the extra time and quiet for reading comprehension, concentration and reasoning.

C2. STEP 2 CS (Clinical Skills)

Review the Step 2 CS Onsite Orientation video and Step 2 CS Content Description and General Information Booklet at www.usmle.org for detailed information about the format and delivery of the Step 2 CS examination.

Describe the accommodations you are requesting for each section of Step 2 CS (i.e., patient encounter, patient note). If you are requesting additional time, state the **amount** of additional time you require in **minutes per encounter or note**.

☐ Patient Encounter: _____

☐ Patient Note: _____

USMLE® Request for Test Accommodations

C3. Do you require wheelchair access at the examination facility? ☐ Yes ☒ No

If yes, please indicate the number of inches required from the bottom of the table to the floor: _____

Section D: Information About Your Impairment

D1. List the **specific DSM/ICD diagnostic code(s) and disability** for which you are requesting accommodations and report the year that it was **first** diagnosed.

<u>DIAGNOSTIC CODE</u>	<u>DISABILITY</u>	<u>YEAR DIAGNOSED</u>
315.00	Reading Disorder, Severe	1992
315.20	Disorder of Written Expression, Severe	1992
314.00	ADHD, Inattentive Type, Moderate	1994
_____	_____	_____
_____	_____	_____

D2. Personal Statement

- ☒ **Attach a signed and dated personal statement describing your impairment(s) and how a major life activity is substantially limited.** The personal statement is your opportunity to tell us how your physical or mental impairment(s) substantially limits your current functioning in a major life activity and how the standard examination conditions are insufficient for your needs. In your own words, describe the impact of your disability on your daily life (do not confine your statement to standardized test performance) and provide a rationale for why the specific accommodation(s) you are requesting are necessary in the context of this examination.

Section E: Accommodation History**E1. Standardized Examinations**

- ☒ **Attach copies of your score report(s) for any previous standardized examination taken.**
- ☒ **If accommodations were provided, attach official documentation from each testing agency confirming the test accommodations they provided.**

List the accommodations received for previous standardized examinations such as college, graduate, or professional school admissions tests and professional licensure or certification examinations (if no accommodations were provided, write NONE).

	<u>DATE(S)</u> <u>ADMINISTERED</u>	<u>ACCOMMODATION(S)</u> <u>PROVIDED</u>
<input checked="" type="checkbox"/> SAT®, ACT®	2004	50% extra time, distraction limited setting
<input checked="" type="checkbox"/> MCAT®	2009, 2010	None
<input type="checkbox"/> GRE®	_____	_____
<input type="checkbox"/> GMAT®	_____	_____
<input type="checkbox"/> LSAT®	_____	_____
<input type="checkbox"/> DAT®	_____	_____
<input type="checkbox"/> COMLEX®	_____	_____
<input checked="" type="checkbox"/> Other (specify)	SHELF 2014-2016	50% extra time, distraction limited setting

USMLE® Request for Test Accommodations

E2. Postsecondary Education

List each school and all formal accommodations you receive/received, and the dates accommodations were provided:

☐ **Attach copies of official records from each school(s) confirming the accommodations they provided.**

☐ **If you receive/received accommodations in medical school and/or residency, have the appropriate official at your medical school/residency complete and submit the USMLE Certification of Prior Test Accommodations form available at www.usmle.org.**

	<u>SCHOOL</u>	<u>ACCOMMODATIONS PROVIDED</u>	<u>DATES PROVIDED</u>
Medical/Graduate/ Professional School	American University of the Caribbean	50% extra time for tests Distraction Limited Test Setting	2011 to Present
Undergraduate School	University of Cincinnati	100% extra time for tests Distraction Limited Test Setting, Recorded Text Material, Computer for Essay Tests, Writing and Proof Reading Assistance, Priority Register	2004 to 2009

E4. Primary and Secondary School

List each school and all formal accommodations you received, and the dates accommodations were provided:

☐ **Attach copies of official records from each school listed confirming the accommodations they provided.**

	<u>SCHOOL</u>	<u>ACCOMMODATIONS PROVIDED</u>	<u>DATES PROVIDED</u>
High School	Archbishop Moeller HS	50% extra time for tests Distraction Limited Setting, Audiobooks, Reader/Scribe, Reading/Writing Assist Informal until 2003 Service Plan.	2000-2004
Middle School	St. Gabriel Consolidated	50% extra time for tests, oral testing Distraction Limited Setting, Exams Read Aloud, Reader/Scribe for Assignments and PRN extra time for Assignments	1996-2000
Elementary School	Home Schooling	Individualized Format	1993-1996
	Remediating Severe Reading and Writing Delay. Mother is a licensed teacher. Glendale Public School Offered Remedial Reading, but Family opted for Private Resources		1991-1993

USMLE® Request for Test Accommodations

Section F: Certification and Authorization

To the best of my knowledge and belief, the information recorded on this request form is true and accurate. I understand that my request for accommodations, including this form and all supporting documentation, must be received by the NBME sufficiently in advance of my anticipated test date in order to provide adequate time to evaluate and process my request.

I acknowledge and agree that any information submitted by me or on my behalf may be used by the USMLE program for the following purposes:

- Evaluating my eligibility for accommodations. When appropriate, my information may be disclosed to qualified independent reviewers for this purpose.
- Conducting research. Any disclosure of my information by the USMLE program will not contain information that could be used to identify me individually; information that is presented in research publications will be reported only in the aggregate.

I authorize the National Board of Medical Examiners (NBME) to contact the entities identified in this request form, and the professionals identified in the documentation I am submitting in connection with it, to obtain further information. I authorize such entities and professionals to provide NBME with all requested further information.

I further understand that the USMLE reserves the right to take action, as described in the Bulletin of Information, if it determines that false information or false statements have been presented on this request form or in connection with my request for test accommodations.

Name (print): Brendan Berger

Signature: 

Date: Feb 24th 2018

E-mail (as a pdf), fax or mail your completed request form and supporting documents to the address below at the same time you submit your Step examination application.

**Disability Services
National Board of Medical Examiners
3750 Market Street
Philadelphia, PA 19104-3190
Telephone: (215) 590-9700
Facsimile: (215) 590-9422
E-mail: disabilityservices@nbme.org**

Exhibit F



National Board of Medical Examiners
3750 Market Street
Philadelphia, PA 19104-3102

215-590-9500 phone
www.nbme.org

Confidential

May 27, 2018

Via E-mail to brendanberger@gmail.com

Brendan James Berger
27 Creekwood Square
Cincinnati, OH 45246

RE: USMLE Step 2 CK

USMLE ID#: 0-893-419-2

Dear Mr. Berger:

We have thoroughly reviewed the documentation provided in support of your request for test accommodations for the United States Medical Licensing Examination (USMLE) Step 2 Clinical Knowledge (CK). We conducted an individualized review of your request in accordance with the guidelines set forth in the amended Americans with Disabilities Act (ADA).

You report the basis of your request for double testing time to be a disorder of reading and disorder of written expression diagnosed in 1992 and Attention-Deficit/Hyperactivity Disorder (ADHD) diagnosed in 1994. In your personal statement you write, *"...I have a severe impairment in my ability to read, process, and comprehend information. When I have additional time to complete tasks, I am able to demonstrate my knowledge. Previously, NBME denied my request for accommodations on the basis that I did not demonstrate that I had a substantial deficit in 'learning' compared to the average person. As the recent diagnosis from Dr. Beach shows, my disability causes a pattern of substantial impairment in reading and comprehension (learning) compared to the average person. A review of the attached supporting materials demonstrates my need for accommodations to level the playing field."*

In a July 2017 report of Psychological and Educational Re-Evaluation conducted when you were a 32 year old fourth year medical student, Cheryl M. Beach, Ph.D. writes that you were seen for re-evaluation in order to obtain an updated measure of your academic processing. Your evaluator writes, *"The history and current test scores and error patterns show the presence of several symptoms of difficulty learning and using academic skills...Diagnostic criteria are met for the Inattentive symptoms...The symptoms are sufficient to interfere with functioning to a significant degree, including educational and occupational goal attainment; he has systems to manage symptoms, when circumstances permit, and he exerts more psychological energy than the average adult to manage these symptoms internally."* Dr. Beach concludes, *"When test accommodations are available, he is successful, though he tends to earn scores that are lower than the ability he otherwise demonstrates; when accommodations are insufficient or not available, there is a consistent, lifelong pattern of inability to read, comprehend, and respond to test items, and earning failing grades for exams...there is clear evidence showing that the combined symptoms of a Specific Learning Disorder and AD/HD manifest in especially severe limitations to access with a substantial impact on learning and test-taking processing speed, AD/HD symptoms, including limitations in the ability to screen out environmental distractions, detail accuracy, sustained focus, working memory, an information organization...A new*

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NBME-0071

recommendation is for recorded test material or a test reader, due to the inaccurate reading comprehension with even simple, lower-complexity text passages that are automatically read with accuracy by the average adult."

Reports of evaluations conducted in 1994, 2003, and 2008, as well as your unaccommodated performances on the MCAT and PSAT, argue against the presence of learning disabilities and seem to directly contradict your evaluator's description of a *lifelong pattern of inability to read, comprehend, and respond to test items*. In stark contrast to your early evaluations and your unaccommodated PSAT and MCAT scores are the exceptionally low and declining scores produced on diagnostic evaluations conducted in 2010, 2013, and 2017; assessments conducted for the purpose of obtaining test accommodations on the MCAT and USMLE. For example, in 2010, you obtained a *Nelson-Denny Reading Test (NDRT)* timed reading comprehension score at the 1st percentile, lower than 99% of a national sample of college educated peers. However, on a high-stakes test taken under standard time conditions in 2010, your MCAT Verbal Reasoning, a measure of one's ability to read passages and answer multiple-choice questions about them under timed conditions, was in the Average to Above Average range, better than 67-83% of a national sample of medical school applicants.

Your MCAT scores obtained without accommodations in 2009 and 2010 were better than 38-51% of a national sample of medical school applicants and consistent with your PSAT performances where your scores in reading, mathematics, and writing were in the average range or above compared to grade peers. Overall, these data do not demonstrate that standard testing time is a barrier to your access to the USMLE.

Accommodations are intended to provide access to the USMLE testing program for individuals with a documented disability as defined by the ADA. A diagnostic label, in and of itself, does not establish coverage under the ADA, nor does prior receipt of accommodations for a particular activity guarantee that identical accommodations are indicated or will be available in all future settings and circumstances. The ADA defines disability as a physical or mental impairment that substantially limits one or more major life activities as compared to most people in the general population.

Your documentation does not demonstrate a substantial limitation in a major life activity as compared to most people or that the requested accommodations are an appropriate modification of your USMLE Step 2 CK test administration. Therefore, after a thorough review of all of your documentation, I must inform you that we are unable to provide you with the requested accommodations.

We will request processing of your exam application without test accommodations. You may inquire at permits@ecfmg.org or call Applicant Information Services at (215) 386-5900 with any questions about your scheduling permit.

Sincerely,



Catherine Farmer, Psy.D.
Director, Disability Services
ADA Compliance Officer, Testing Programs

C: Phyllis E. Brown, Esquire at abrown@blfohio.com

Exhibit G



SAMPLE TEST QUESTIONS

Step 1



This booklet was updated February 2019.

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USMLE STEP 1 TEST QUESTION FORMATS

Single-Item Questions

A single patient-centered vignette is associated with one question followed by four or more response options. The response options are lettered (A, B, C, D, E). A portion of the questions require interpretation of graphic or pictorial materials. You are required to select the best answer to the question. Other options may be partially correct, but there is only ONE BEST answer. This is the traditional, most frequently used multiple-choice question format on the examination.

Strategies for Answering Single One-Best-Answer Test Questions

The following are strategies for answering one-best-answer items:

- Read each patient vignette and question carefully. It is important to understand what is being asked.
- Try to generate an answer and then look for it in the response option list.
- Alternatively, read each response option carefully, eliminating those that are clearly incorrect.
- Of the remaining options, select the one that is most correct.
- If unsure about an answer, it is better to guess since unanswered questions are automatically counted as wrong answers.

Example Item

A 32-year-old woman with type 1 diabetes mellitus has had progressive renal failure over the past 2 years. She has not yet started dialysis. Examination shows no abnormalities. Her hemoglobin concentration is 9 g/dL, hematocrit is 28%, and mean corpuscular volume is 94 μm^3 . A blood smear shows normochromic, normocytic cells. Which of the following is the most likely cause?

- | | |
|-----------------------------------|--------------------------------|
| (A) Acute blood loss | (F) Microangiopathic hemolysis |
| (B) Chronic lymphocytic leukemia | (G) Polycythemia vera |
| (C) Erythrocyte enzyme deficiency | (H) Sickle cell disease |
| (D) Erythropoietin deficiency | (I) Sideroblastic anemia |
| (E) Immuno-hemolysis | (J) β -Thalassemia trait |

(Answer: D)

NOTE: Some item types that appear on the Step 1 examination are NOT depicted in the sample items provided in this booklet, eg, items with multimedia features, such as audio. Also, when additional item formats are added to the exam, notice will be provided at the USMLE website: <http://www.usmle.org>. You must monitor the website to stay informed about the types of items that occur in the exam, and you must practice with the downloadable sample test items available on the USMLE website to be fully prepared for the examination.

INTRODUCTION TO USMLE STEP 1 SAMPLE TEST QUESTIONS

The following pages include 117 sample test questions. Most of these questions are the same as those you can install on your computer from the USMLE website. Please note that reviewing the sample questions as they appear on pages 7-43 is not a substitute for practicing with the test software. You should download and run the Step 1 tutorial and practice test items that are provided on the USMLE website well before your test date. The sample materials available on the USMLE website include additional items and item formats that do not appear in this booklet, such as items with associated audio or video findings. You should become familiar with all item formats that will be used in the actual examination.

Although the sample questions exemplify content on the Step 1 examination overall, they may not reflect the content coverage on individual examinations. In the actual examination, questions will be presented in random order; they will not be grouped according to specific content. The questions will be presented one at a time in a format designed for easy on-screen reading, including use of the Normal Laboratory Values table (included here on pages 5 and 6) and some pictorials. Photographs, charts, and x-rays in this booklet are not of the same quality as the pictorials used in the actual examination. In addition, you will be able to adjust the brightness and contrast of pictorials on the computer screen.

To take the following sample test questions as they would be timed in the actual examination, you should allow a maximum of 1 hour for each 40-item block, and a maximum of 55 minutes, 30 seconds, for the 37-item block, for a total of 2 hours, 55 minutes, 30 seconds. Please note that the third block has 37 items instead of 40 because the multimedia items have been removed, and the recommended time to complete the block has been adjusted accordingly. Please be aware that most examinees perceive the time pressure to be greater during an actual examination. All examinees are strongly encouraged to practice with the downloadable version to become familiar with all item formats and exam timing. An answer form for recording answers is provided on page 44. An answer key is provided on page 45. In the actual examination, answers will be selected on the screen; no answer form will be provided.

LABORATORY VALUES

	<u>REFERENCE RANGE</u>	<u>SI REFERENCE INTERVALS</u>
BLOOD, PLASMA, SERUM		
Alanine aminotransferase (ALT), serum	8-20 U/L	8-20 U/L
Amylase, serum	25-125 U/L	25-125 U/L
Aspartate aminotransferase (AST), serum	8-20 U/L	8-20 U/L
Bilirubin, serum (adult) Total // Direct	0.1-1.0 mg/dL // 0.0-0.3 mg/dL	2-17 µmol/L // 0-5 µmol/L
Calcium, serum (Ca ²⁺)	8.4-10.2 mg/dL	2.1-2.8 mmol/L
Cholesterol, serum	Rec: <200 mg/dL	<5.2 mmol/L
Cortisol, serum	0800 h: 5-23 µg/dL // 1600 h: 3-15 µg/dL	138-635 nmol/L // 82-413 nmol/L
	2000 h: ≤ 50% of 0800 h	Fraction of 0800 h: ≤ 0.50
Creatine kinase, serum	Male: 25-90 U/L	25-90 U/L
	Female: 10-70 U/L	10-70 U/L
Creatinine, serum	0.6-1.2 mg/dL	53-106 µmol/L
Electrolytes, serum		
Sodium (Na ⁺)	136-145 mEq/L	136-145 mmol/L
Potassium (K ⁺)	3.5-5.0 mEq/L	3.5-5.0 mmol/L
Chloride (Cl ⁻)	95-105 mEq/L	95-105 mmol/L
Bicarbonate (HCO ₃ ⁻)	22-28 mEq/L	22-28 mmol/L
Magnesium (Mg ²⁺)	1.5-2.0 mEq/L	0.75-1.0 mmol/L
Estradiol, total, serum (in pregnancy)		
24-28 wks // 32-36 wks	30-170 ng/mL // 60-280 ng/mL	104-590 nmol/L // 208-970 nmol/L
28-32 wks // 36-40 wks	40-220 ng/mL // 80-350 ng/mL	140-760 nmol/L // 280-1210 nmol/L
Ferritin, serum		
	Male: 15-200 ng/mL	15-200 µg/L
	Female: 12-150 ng/mL	12-150 µg/L
Follicle-stimulating hormone, serum/plasma		
	Male: 4-25 mIU/mL	4-25 U/L
	Female: premenopause 4-30 mIU/mL	4-30 U/L
	midcycle peak 10-90 mIU/mL	10-90 U/L
	postmenopause 40-250 mIU/mL	40-250 U/L
Gases, arterial blood (room air)		
pH	7.35-7.45	[H ⁺] 36-44 nmol/L
PCO ₂	33-45 mm Hg	4.4-5.9 kPa
PO ₂	75-105 mm Hg	10.0-14.0 kPa
Glucose, serum		
	Fasting: 70-110 mg/dL	3.8-6.1 mmol/L
	2-h postprandial: < 120 mg/dL	< 6.6 mmol/L
Growth hormone - arginine stimulation		
	Fasting: < 5 ng/mL	< 5 µg/L
	provocative stimuli: > 7 ng/mL	> 7 µg/L
Immunoglobulins, serum		
IgA	76-390 mg/dL	0.76-3.90 g/L
IgE	0-380 IU/mL	0-380 kIU/L
IgG	650-1500 mg/dL	6.5-15 g/L
IgM	40-345 mg/dL	0.4-3.45 g/L
Iron	50-170 µg/dL	9-30 µmol/L
Lactate dehydrogenase, serum	45-90 U/L	45-90 U/L
Luteinizing hormone, serum/plasma		
	Male: 6-23 mIU/mL	6-23 U/L
	Female: follicular phase 5-30 mIU/mL	5-30 U/L
	midcycle 75-150 mIU/mL	75-150 U/L
	postmenopause 30-200 mIU/mL	30-200 U/L
Osmolality, serum	275-295 mOsmol/kg H ₂ O	275-295 mOsmol/kg H ₂ O
Parathyroid hormone, serum, N-terminal	230-630 pg/mL	230-630 ng/L
Phosphatase (alkaline), serum (p-NPP at 30°C)	20-70 U/L	20-70 U/L
Phosphorus (inorganic), serum	3.0-4.5 mg/dL	1.0-1.5 mmol/L
Prolactin, serum (hPRL)	< 20 ng/mL	< 20 µg/L
Proteins, serum		
Total (recumbent)	6.0-7.8 g/dL	60-78 g/L
Albumin	3.5-5.5 g/dL	35-55 g/L
Globulin	2.3-3.5 g/dL	23-35 g/L
Thyroid-stimulating hormone, serum or plasma	0.5-5.0 µU/mL	0.5-5.0 mU/L
Thyroidal iodine (¹²³ I) uptake	8%-30% of administered dose/24 h	0.08-0.30/24 h
Thyroxine (T ₄), serum	5-12 µg/dL	64-155 nmol/L
Triglycerides, serum	35-160 mg/dL	0.4-1.81 mmol/L
Triiodothyronine (T ₃), serum (RIA)	115-190 ng/dL	1.8-2.9 nmol/L
Triiodothyronine (T ₃) resin uptake	25%-35%	0.25-0.35
Urea nitrogen, serum	7-18 mg/dL	1.2-3.0 mmol/L
Uric acid, serum	3.0-8.2 mg/dL	0.18-0.48 mmol/L

LABORATORY VALUES (continued)

	<u>REFERENCE RANGE</u>	<u>SI REFERENCE INTERVALS</u>
BODY MASS INDEX (BMI)		
Body mass index	Adult: 19-25 kg/m ²	
CEREBROSPINAL FLUID		
Cell count	0-5/mm ³	0-5 x 10 ⁶ /L
Chloride	118-132 mEq/L	118-132 mmol/L
Gamma globulin	3%-12% total proteins	0.03-0.12
Glucose	40-70 mg/dL	2.2-3.9 mmol/L
Pressure	70-180 mm H ₂ O	70-180 mm H ₂ O
Proteins, total	<40 mg/dL	<0.40 g/L
HEMATOLOGIC		
Bleeding time (template)	2-7 minutes	2-7 minutes
Erythrocyte count	Male: 4.3-5.9 million/mm ³ Female: 3.5-5.5 million/mm ³	4.3-5.9 x 10 ¹² /L 3.5-5.5 x 10 ¹² /L
Erythrocyte sedimentation rate (Westergren)	Male: 0-15 mm/h Female: 0-20 mm/h	0-15 mm/h 0-20 mm/h
Hematocrit	Male: 41%-53% Female: 36%-46%	0.41-0.53 0.36-0.46
Hemoglobin A _{1c}	≤ 6%	≤ 0.06
Hemoglobin, blood	Male: 13.5-17.5 g/dL Female: 12.0-16.0 g/dL	2.09-2.71 mmol/L 1.86-2.48 mmol/L
Hemoglobin, plasma	1-4 mg/dL	0.16-0.62 mmol/L
Leukocyte count and differential		
Leukocyte count	4500-11,000/mm ³	4.5-11.0 x 10 ⁹ /L
Segmented neutrophils	54%-62%	0.54-0.62
Bands	3%-5%	0.03-0.05
Eosinophils	1%-3%	0.01-0.03
Basophils	0%-0.75%	0-0.0075
Lymphocytes	25%-33%	0.25-0.33
Monocytes	3%-7%	0.03-0.07
Mean corpuscular hemoglobin	25.4-34.6 pg/cell	0.39-0.54 fmol/cell
Mean corpuscular hemoglobin concentration	31%-36% Hb/cell	4.81-5.58 mmol Hb/L
Mean corpuscular volume	80-100 μm ³	80-100 fL
Partial thromboplastin time (activated)	25-40 seconds	25-40 seconds
Platelet count	150,000-400,000/mm ³	150-400 x 10 ⁹ /L
Prothrombin time	11-15 seconds	11-15 seconds
Reticulocyte count	0.5%-1.5%	0.005-0.015
Thrombin time	<2 seconds deviation from control	<2 seconds deviation from control
Volume		
Plasma	Male: 25-43 mL/kg Female: 28-45 mL/kg	0.025-0.043 L/kg 0.028-0.045 L/kg
Red cell	Male: 20-36 mL/kg Female: 19-31 mL/kg	0.020-0.036 L/kg 0.019-0.031 L/kg
SWEAT		
Chloride	0-35 mmol/L	0-35 mmol/L
URINE		
Calcium	100-300 mg/24 h	2.5-7.5 mmol/24 h
Chloride	Varies with intake	Varies with intake
Creatinine clearance	Male: 97-137 mL/min Female: 88-128 mL/min	
Estriol, total (in pregnancy)		
30 wks	6-18 mg/24 h	21-62 μmol/24 h
35 wks	9-28 mg/24 h	31-97 μmol/24 h
40 wks	13-42 mg/24 h	45-146 μmol/24 h
17-Hydroxycorticosteroids	Male: 3.0-10.0 mg/24 h Female: 2.0-8.0 mg/24 h	8.2-27.6 μmol/24 h 5.5-22.0 μmol/24 h
17-Ketosteroids, total	Male: 8-20 mg/24 h Female: 6-15 mg/24 h	28-70 μmol/24 h 21-52 μmol/24 h
Osmolality	50-1400 mOsmol/kg H ₂ O	
Oxalate	8-40 μg/mL	90-445 μmol/L
Potassium	Varies with diet	Varies with diet
Proteins, total	<150 mg/24 h	<0.15 g/24 h
Sodium	Varies with diet	Varies with diet
Uric acid	Varies with diet	Varies with diet

USMLE STEP 1 SAMPLE TEST QUESTIONS

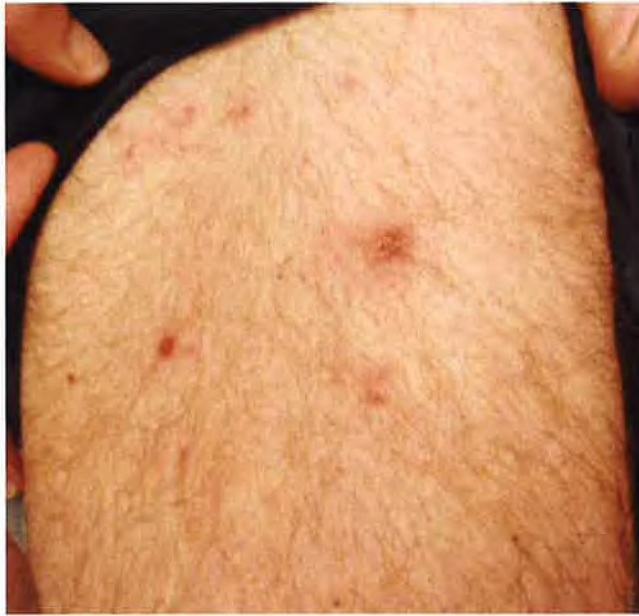
BLOCK 1, ITEMS 1-40

1. A 28-year-old man comes to the physician because of a 1-year history of pain with urination that has increased in severity during the past month. He also has had episodes of blood in his urine during the past 5 years. He lived in sub-Saharan Africa until he came to the USA 6 months ago for graduate school. His temperature is 38°C (100.4°F), pulse is 80/min, respirations are 16/min, and blood pressure is 110/84 mm Hg. Physical examination shows suprapubic tenderness. Laboratory studies show:

Hemoglobin	12.3 g/dL
Hematocrit	37%
Leukocyte count	13,400/mm ³
Segmented neutrophils	65%
Bands	5%
Eosinophils	5%
Lymphocytes	22%
Monocytes	3%
Serum	
Urea nitrogen	75 mg/dL
Creatinine	3.8 mg/dL
Urine	
Blood	3+
RBC	200/hpf
WBC	100/hpf
RBC casts	absent
WBC casts	absent

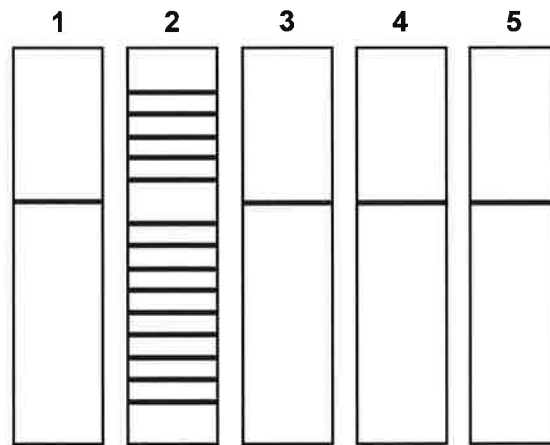
Imaging studies show bilateral hydroureter and hydronephrosis and foci of calcification in the region of the bladder. A biopsy specimen of the bladder shows marked chronic inflammation with fibrosis and scattered granulomas. Which of the following best explains the biopsy findings?

- (A) Exposure to a chemical toxin
 (B) Interstitial cystitis
 (C) Malacoplakia
 (D) Schistosomiasis
 (E) Vesicoureteral reflux
-
2. A 14-year-old boy is brought to the emergency department after being hit with a baseball bat on the lateral side of his leg immediately below the knee. He is unable to dorsiflex his foot. Which of the following nerves is most likely injured?
- (A) Common fibular (peroneal)
 (B) Femoral
 (C) Obturator
 (D) Sural
 (E) Tibial



3. A 24-year-old man comes to the office because of a 2-day history of a red, itchy rash on his buttocks and legs. Four days ago, he returned from a cruise to the Caribbean, during which he swam in the ship's pool and used the hot tub. He appears well. His vital signs are within normal limits. Physical examination shows the findings in the photograph. The infectious agent causing these findings most likely began to proliferate in which of the following locations?
- (A) Apocrine gland
 - (B) Dermis
 - (C) Eccrine gland
 - (D) Hair follicle
 - (E) Sebaceous gland
-
4. A 14-year-old girl is brought to the physician after her mother learned that she began having sexual intercourse with various partners 1 month ago. She does not use condoms or other contraception. The mother is concerned about her behavior. The patient's parents separated 3 months ago. She had been an honor student and excelled in sports and leadership positions at school before the separation. Since the separation, however, she has become sullen, defiant, and rebellious. She has begun smoking cigarettes, disobeying her curfew, and being truant from school. This patient is most likely using which of the following defense mechanisms?
- (A) Acting out
 - (B) Displacement
 - (C) Projection
 - (D) Reaction formation
 - (E) Sublimation

5. A 24-year-old woman comes to the physician for a follow-up examination. One week ago, she was treated in the emergency department after she accidentally spilled hot grease on her left leg while working at a fast-food restaurant. Examination of the left lower extremity shows a 7-cm, pink, soft, granular, edematous wound. The formation of this tissue was most likely caused by increased activity of which of the following?
- (A) Complement C3b
 - (B) Glycosylation-dependent cell adhesion molecule-1
 - (C) P-selectin
 - (D) Stromelysin
 - (E) Vascular endothelial growth factor
6. A 63-year-old woman comes to the physician 1 day after the sudden onset of pain and swelling of her right knee. She has had no injury. Her medications include occasional ibuprofen for mild osteoarthritis of both knees. Her temperature is 37°C (98.6°F), pulse is 97/min, respirations are 19/min, and blood pressure is 129/79 mm Hg. Examination of the right knee shows warmth, erythema, and effusion. Exquisite tenderness is produced with minimal range-of-motion testing. Examination of synovial fluid obtained via joint aspiration shows that it is clear, with positively birefringent rhomboids observed under polarized light microscopy. Deposition of which of the following substances is the most likely cause of these findings?
- (A) Ammonium urate
 - (B) Calcium oxalate
 - (C) Calcium pyrophosphate
 - (D) Calcium urate
 - (E) Sodium urate
7. A 55-year-old woman with small cell carcinoma of the lung is admitted to the hospital to undergo chemotherapy. Six days after treatment is started, she develops a temperature of 38°C (100.4°F). Physical examination shows no other abnormalities. Laboratory studies show a leukocyte count of 100/mm³ (5% segmented neutrophils and 95% lymphocytes). Which of the following is the most appropriate pharmacotherapy to increase this patient's leukocyte count?
- (A) Darbepoetin
 - (B) Dexamethasone
 - (C) Filgrastim
 - (D) Interferon alfa
 - (E) Interleukin-2 (IL-2)
 - (F) Leucovorin
8. A 37-year-old woman with right lower extremity edema is evaluated because of the sudden onset of shortness of breath and pleuritic chest pain. A diagnosis of pulmonary embolism is made. Which of the following signs, if present on physical examination, would be the most specific indicator of pulmonary arterial hypertension in this patient?
- (A) Increased jugular venous pressure
 - (B) P₂ louder than A₂
 - (C) Peripheral edema
 - (D) Presence of an S₃
 - (E) Pulmonary crackles



Lane 1: Liver
 Lane 2: Bone Marrow
 Lane 3: Kidney
 Lane 4: Cerebellum
 Lane 5: Pancreas

9. During an experiment, a Southern blot analysis is done by digesting DNA samples with a single restriction endonuclease, separating the digestion products by gel electrophoresis, and transferring them to a filter. The investigator probes the filter by exposing it to a cDNA clone that encodes a single immunoglobulin-constant region. The figure shows the resulting pattern with DNA samples isolated from different organs. Assuming there were no technical errors, the Southern blot analysis results demonstrate which of the following processes?
- (A) Affinity maturation
 - (B) Apoptosis
 - (C) Gene rearrangement
 - (D) RNA splicing
 - (E) Somatic hypermutation
-
10. During a clinical study examining the effects of exercise, men between the ages of 20 and 30 years are evaluated during a 15-minute session on a treadmill. The average pulse for the last 2 minutes of the session is 175/min. During the last minute of exercise, various measurements are taken. Compared with the measurement before the session, which of the following is most likely to be decreased?
- (A) Cardiac output
 - (B) Oxygen consumption
 - (C) Pulse pressure
 - (D) Stroke volume
 - (E) Systolic blood pressure
 - (F) Total peripheral resistance

11. A 26-year-old man is brought to the emergency department by ambulance 30 minutes after being shot in the leg. He is unconscious and appears markedly pale. His pulse is 120/min, respirations are 16/min, and blood pressure is 80/60 mm Hg. Compared with a healthy adult, which of the following findings is most likely in this patient?

	Arterial Baroreceptor Firing Rate	Systemic Vascular Resistance	Pulmonary Vascular Resistance	Systemic Capillary Fluid Transfer
(A)	↑	↑	↑	filtration
(B)	↑	↓	↑	absorption
(C)	↑	↓	↓	filtration
(D)	↓	↑	↑	absorption
(E)	↓	↑	↓	filtration
(F)	↓	↓	↓	absorption

12. A 17-year-old boy is brought to the emergency department 30 minutes after being found with a "blank stare" and flat facial expression at a party. His pulse is 72/min, and blood pressure is 104/68 mm Hg. He is sitting upright and appears catatonic. Physical examination shows rigidity. During the examination, he becomes hostile and attempts to assault the physician. This patient most likely ingested which of the following drugs?

- (A) Cocaine
- (B) Diazepam
- (C) Methamphetamine
- (D) Oxycodone
- (E) PCP (phencyclidine)

13. A 26-year-old woman is brought to the emergency department because of an 8-hour history of severe back and abdominal pain and mild but persistent vaginal bleeding. Ultrasonography of the abdomen shows a 2-cm ectopic pregnancy in the ampulla. The ampulla has ruptured into the surrounding tissue. Fluid from this rupture will most likely be found in which of the following locations?

- (A) Lesser peritoneal cavity
- (B) Mesometrium
- (C) Pouch of Douglas
- (D) Uterine cavity
- (E) Vagina

14. A 14-year-old girl has had nausea, intermittent diarrhea, and a 2.2-kg (5-lb) weight loss over the past 4 weeks. Examination shows a migrating serpiginous pruritic perianal rash. Her leukocyte count is $8000/\text{mm}^3$ with 20% eosinophils. Which of the following tests is most likely to yield an accurate diagnosis?

- (A) Blood smear
- (B) Bone marrow biopsy
- (C) KOH preparation
- (D) Microscopic examination of the stool
- (E) Skin snip

15. A 40-year-old woman comes to the physician because of a 6-month history of increased facial hair growth. Her last menstrual period was 4 months ago. She is 165 cm (5 ft 5 in) tall and weighs 70 kg (154 lb); BMI is 26 kg/m². Her pulse is 80/min, and blood pressure is 130/82 mm Hg. Physical examination shows temporal balding and coarse dark hair on the upper lip and chin. Pelvic examination shows clitoral enlargement. Her serum testosterone concentration is increased. Serum concentrations of androstenedione, dehydroepiandrosterone, and urinary 17-ketosteroids are within the reference ranges. Ultrasonography of the pelvis shows a 12-cm ovarian mass. Which of the following best describes this mass?
- (A) Granulosa tumor
 - (B) Ovarian carcinoid
 - (C) Sertoli-Leydig tumor
 - (D) Teratoma
 - (E) Thecoma
16. A 45-year-old woman with systemic sclerosis (scleroderma) comes to the physician because of a 3-week history of progressive shortness of breath and nonproductive cough. Her temperature is 36.9°C (98.4°F), pulse is 82/min, respirations are 20/min, and blood pressure is 136/85 mm Hg. Crackles are heard in both lower lung fields. Pulmonary function tests show total lung capacity is 80% of predicted, and diffusing capacity for carbon monoxide, corrected for alveolar volume, is 65% of predicted. Histologic examination of a lung biopsy specimen is most likely to show which of the following findings?
- (A) Diffuse interstitial fibrosis
 - (B) Intra-alveolar exudates
 - (C) Multiple thromboemboli
 - (D) Necrotizing vasculitis
 - (E) Non-necrotizing interstitial granulomas
17. A new blood test to detect prostate cancer is evaluated in 300 male volunteers. A needle biopsy of the prostate gland is done on all men with serum prostate-specific antigen concentrations greater than 5 ng/mL (N<4). One hundred men undergo biopsy procedures; 90 are found to have prostate cancer, and five are found to have chronic prostatitis. Which of the following is necessary to calculate the sensitivity of this test?
- (A) Incidence of chronic prostatitis in the general population
 - (B) Number of men with test results greater than 5 ng/mL and a normal biopsy specimen
 - (C) Prevalence of chronic prostatitis in the general population
 - (D) Prostate biopsies of men with test results equal to or below 5 ng/mL
18. A 62-year-old woman comes to the physician because of low back pain for 1 week. Menopause occurred 10 years ago. Physical examination shows localized tenderness over the lumbar spine after movement. X-rays of the spine show a compression fracture of L1-2. A DEXA scan shows decreased bone mineral density. Serum calcium and phosphorus concentrations and serum alkaline phosphatase activity are within the reference ranges. A bisphosphonate drug is prescribed. The expected beneficial effect of this drug is most likely due to which of the following actions?
- (A) Decreased insulin-like growth factor-1 concentration
 - (B) Decreased osteoclast activity
 - (C) Decreased osteoprotegerin production
 - (D) Increased 1,25-dihydroxycholecalciferol concentration
 - (E) Increased osteoblast activity
 - (F) Increased receptor activator of NF-κB ligand (RANKL) production

19. A 26-year-old woman is brought to the emergency department 3 hours after ingesting approximately 50 tablets of aspirin in a suicide attempt. She is nauseated, confused, and sleepy. Her pulse is 130/min, respirations are 30/min, and blood pressure is 100/60 mm Hg. Which of the following sets of laboratory values is most likely on evaluation of blood obtained before treatment?

	Serum HCO_3^-	Arterial Blood	
		pH	PCO_2
(A)	↑	↓	↑
(B)	↓	↓	↓
(C)	↑	↑	↓
(D)	↓	↓	↑
(E)	↑	↑	↑

20. An investigator is studying the incidence of the common cold among medical students at various time points during the school year. Results show an increased incidence of upper respiratory tract infections among these students during finals week. It is hypothesized that the stress of studying for examinations adversely affects the immune system, making the students more susceptible to infection. Which of the following laboratory findings in these students during examination week is most likely to support this hypothesis?

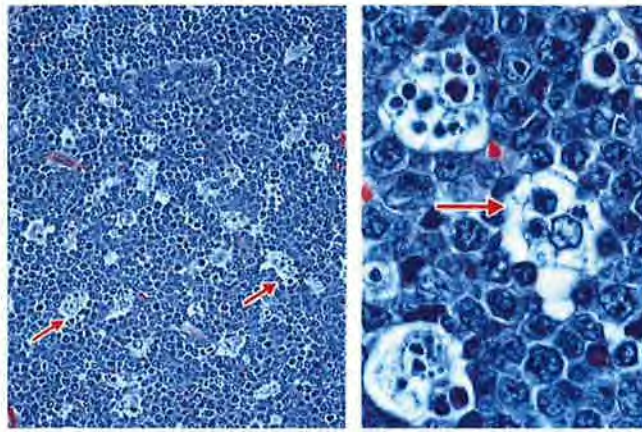
- (A) Decreased AM serum cortisol concentration
- (B) Decreased macrophage activity
- (C) Increased basophil count
- (D) Increased lymphocyte count
- (E) Increased natural killer cell activity

21. A 63-year-old man is brought to the emergency department because of a 4-day history of increasingly severe left leg pain and swelling of his left calf. He also has a 1-month history of increasingly severe upper midthoracic back pain. During this time, he has had a 9-kg (20-lb) weight loss despite no change in appetite. He has no history of major medical illness. His only medication is ibuprofen. He is 180 cm (5 ft 11 in) tall and weighs 82 kg (180 lb); BMI is 25 kg/m^2 . His vital signs are within normal limits. On examination, lower extremity pulses are palpable bilaterally. The remainder of the physical examination shows no abnormalities. An x-ray of the thoracic spine shows no abnormalities. A CT scan of the abdomen shows a 3-cm mass in the body of the pancreas; there are liver metastases and encasement of the superior mesenteric artery. Ultrasonography of the left lower extremity shows a femoropopliteal venous clot. Which of the following is the most likely cause of this patient's symptoms?

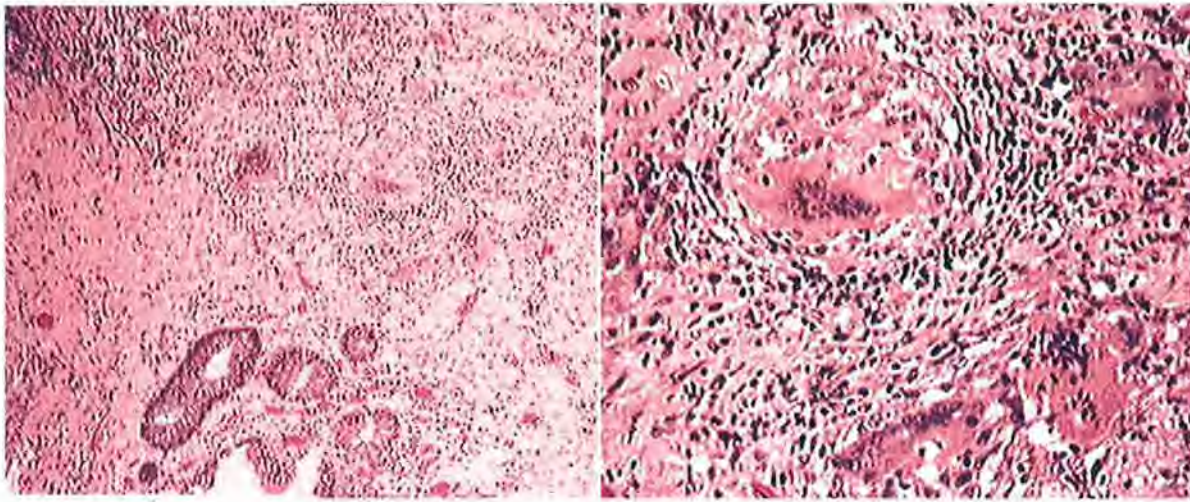
- (A) Carcinoid syndrome
- (B) Hypercoagulability from advanced malignancy
- (C) Multiple endocrine neoplasia
- (D) Splenic artery aneurysm and embolic disease of the left lower extremity
- (E) Superior mesenteric artery syndrome

22. A 35-year-old man comes to the physician because of pain and swelling of his right arm where he scraped it on a tree branch 2 days ago. His temperature is 38.3°C (101°F). Examination of the right forearm shows edema around a fluctuant erythematous lesion at the site of trauma. The area is extremely tender to palpation. Which of the following is most likely the primary mechanism of the development of edema in this patient?

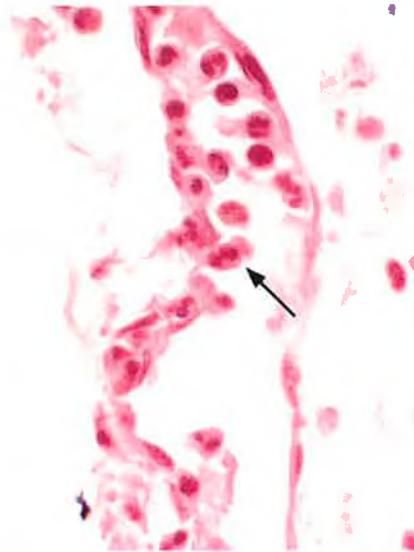
- (A) Degranulation of eosinophils
- (B) Disruption of vascular basement membranes
- (C) Increased hydrostatic pressure
- (D) Release of thromboxane
- (E) Separation of endothelial junctions



23. A 4-year-old boy from Brazil is brought to the physician because of a 1-week history of painless swelling of his jaw and pressure around his eyes. He is at the 80th percentile for height and weight. Physical examination shows a single 12 × 10-cm lesion in the right side of the jaw with diffuse limits and irregular edges. Photomicrographs of an incisional biopsy specimen of the lesion are shown. Based on these findings, which of the following processes is most likely occurring in the region indicated by the arrows?
- (A) Apoptosis
 - (B) Necrosis
 - (C) Oncosis
 - (D) Ostosis
 - (E) Symptosis
-
24. A 33-year-old woman comes to the physician because of a 2-day history of mild nausea, increased urinary urgency and frequency, and constipation. She also has had a 4.5-kg (10-lb) weight loss during the past 2 weeks and a 3-week history of vaginal bleeding. Pelvic examination shows a nodular cervix with an irregular, friable posterior lip, and a rock-hard, irregular, immobile pelvic mass that extends across the pelvis. Examination of biopsy specimens from the cervix and anterior wall of the vagina show well-differentiated keratinizing squamous cell carcinoma. Which of the following best describes the pathogenesis of this patient's disease?
- (A) Inactivation of cellular p53
 - (B) Insertion of viral promoters adjacent to cellular growth factor genes
 - (C) Specialized transduction
 - (D) Transactivation of cellular growth factor genes by *TAX*
 - (E) Translocation of *CMYC* to an Ig gene promoter
25. A 27-year-old man is admitted to the hospital 45 minutes after being involved in a motor vehicle collision. Physical examination shows a sluggish response to stimuli. Neurologic examination shows no other abnormalities. A skull x-ray shows a linear, nondepressed basal skull fracture. Two weeks later, the patient develops polyuria and polydipsia. Laboratory studies show a serum glucose concentration within the reference range, increased serum osmolality, and decreased urine osmolality. Following the administration of desmopressin, urine osmolality increases. The beneficial effect of this drug is most likely due to activation of which of the following?
- (A) Adenylyl cyclase
 - (B) Ca^{2+} channels
 - (C) Janus kinase
 - (D) Serine kinase
 - (E) Tyrosine kinase



26. A 30-year-old man is admitted to the hospital for evaluation. He has a 6-week history of colicky abdominal pain and diarrhea with occasional blood. Three days after admission, he suddenly develops peritonitis and sepsis. Despite appropriate care, he dies. At autopsy, examination shows a fibrinous exudate over the peritoneal and serosal surfaces, and a punctate opening is seen in the wall of a thickened loop of small intestine. Several lengths of the small and large intestines are also thickened and adherent to one another, with marked areas of narrowing. Photomicrographs of a section of the colon are shown. Which of the following is the most likely diagnosis?
- (A) Colon cancer
 - (B) Crohn disease
 - (C) Diverticulitis
 - (D) Ischemic necrosis
 - (E) Ulcerative colitis
-
27. A couple comes for preconceptional genetic counseling because they both have a family history of α -thalassemia. The woman has a minimally decreased hemoglobin concentration. Genetic studies show a single gene deletion. The man has microcytic anemia and a two-gene deletion. If the two-gene deletion is in *trans* (one deletion on the maternal gene and one deletion on the paternal gene), which of the following percentages of their offspring will have a two-gene deletion?
- (A) 0%
 - (B) 25%
 - (C) 50%
 - (D) 75%
 - (E) 100%
28. A healthy 22-year-old man participates in a study of glucose metabolism. At the beginning of the study, his serum glucose concentration is within the reference range. He consumes an 800-calorie meal consisting of protein, fat, and carbohydrates. He then sleeps through the night without additional food or drink. Twelve hours later, his serum glucose concentration remains within the reference range. Which of the following mechanisms is most likely involved in maintaining this man's serum glucose concentration?
- (A) Continued gut absorption of calories from the ingested meal
 - (B) Glucose release from skeletal muscle
 - (C) Glycogenolysis in the liver
 - (D) Increased leptin release from adipose tissues
 - (E) Inhibition of glucagon release by the pancreas



29. A 63-year-old homeless man is brought to the emergency department 1 hour after police found him unresponsive. His respirations are 30/min. Crackles are heard over the left upper and the entire right lung fields. Despite appropriate lifesaving measures, he dies. A photomicrograph of a section of the right lung obtained at autopsy is shown. Which of the following mediators is the most likely cause of the position of the cell indicated by the arrow?
- (A) Bradykinin
 - (B) C5a
 - (C) Histamine
 - (D) Nitrous oxide
 - (E) Prostaglandins
-
30. A 16-year-old boy is brought to the physician because of a 3-day history of abdominal pain and vomiting; he also has had decreased appetite during this period. The pain was initially on the right but now has become generalized. His temperature is 38.8°C (101.8°F), pulse is 100/min, respirations are 20/min, and blood pressure is 143/83 mm Hg. Abdominal examination shows guarding with diffuse rebound tenderness. There are no palpable masses. A CT scan of the abdomen shows a perforated appendix. Examination of peritoneal fluid from this patient will most likely show which of the following organisms?
- (A) *Candida albicans*
 - (B) *Citrobacter freundii*
 - (C) *Escherichia coli*
 - (D) *Staphylococcus aureus*
 - (E) *Streptococcus pneumoniae*
31. A 16-year-old boy is admitted to the emergency department because of a knife wound to the left side of his chest. An x-ray of the chest shows an air-fluid level in the left side of the chest, partial collapse of the left lung, and elevation of the stomach bubble. The mediastinum is in the midline. Which of the following is the most likely diagnosis?
- (A) Hemopneumothorax, not under tension
 - (B) Hemothorax, not under tension
 - (C) Pneumothorax, not under tension
 - (D) Tension hemopneumothorax
 - (E) Tension hemothorax
 - (F) Tension pneumothorax

32. A 20-year-old woman comes to the physician because of a 5-year history of heavy bleeding with menses that often requires her to change her sanitary pads three times hourly. Menses occur at regular 28-day intervals. She recently sustained a minor cut to her finger, and the bleeding took longer to stop than usual. She has not had easy bruising or change in weight. She only takes an oral contraceptive, but she has not been sexually active for the past 6 months. Her temperature is 37.5°C (99.5°F), pulse is 72/min, respirations are 12/min, and blood pressure is 120/66 mm Hg. Physical examination shows mildly pale conjunctivae. Pelvic examination shows no abnormalities. Laboratory studies show:

Hemoglobin	10.5 g/dL
Hematocrit	31.3%
Mean corpuscular hemoglobin concentration	28% Hb/cell
Mean corpuscular volume	70 μm^3
Leukocyte count	5500/mm ³
Platelet count	275,000/mm ³
Platelet aggregation studies	normal
Prothrombin time	10.5 sec (INR=1.0)
Partial thromboplastin time	28 sec

A Pap smear shows no abnormalities. Which of the following hematologic disorders is the most likely cause of this patient's menorrhagia?

- (A) Afibrinogenemia
 - (B) Hemophilia A
 - (C) Intravascular coagulation
 - (D) Vitamin K deficiency
 - (E) von Willebrand disease
-
33. A 2-year-old boy is brought to the physician for a well-child examination. He was delivered at term after an uncomplicated pregnancy. His birth weight was 3500 g (7 lb 11 oz), and Apgar scores were 8 and 10 at 1 and 5 minutes, respectively. At the age of 15 months, physical examination showed no abnormalities, but he was not yet talking. Both of his parents had learning difficulties in school, and his mother stopped attending after the 10th grade. He has a maternal uncle with cognitive disabilities. He is at the 25th percentile for height, 15th percentile for weight, and 90th percentile for head circumference. He appears irritable, he resists making eye contact, and he is flapping his hands. Which of the following is the most likely cause of this patient's condition?
- (A) Creation of an alternative splice site
 - (B) Frameshift mutation
 - (C) Missense mutation
 - (D) Nonsense mutation
 - (E) Trinucleotide repeat expansion
34. A 31-year-old woman with type 2 diabetes mellitus comes to the physician because of an oozing, foul-smelling wound on her foot for 2 days. Physical examination shows a 4-cm, necrotizing wound with a purplish black discoloration over the heel. Crepitant bullae producing profuse amounts of serous drainage are seen. A Gram stain of a tissue biopsy specimen shows gram-positive rods. The causal organism most likely produces which of the following virulence factors?
- (A) Endotoxin
 - (B) Fimbriae
 - (C) Pneumolysin
 - (D) Polysaccharide capsule
 - (E) α -Toxin

35. A 10-month-old boy is brought to the physician because of a 4-day history of fever and cough. His illness began with low-grade fever and copious, clear nasal discharge. Two days ago he developed a moist, nonproductive cough and rapid breathing. He has received all scheduled childhood immunizations. He attends a large day-care center and has three school-aged siblings. His temperature is 38°C (100.4°F), pulse is 101/min, respirations are 38/min, and blood pressure is 85/60 mm Hg. Physical examination shows nasal flaring and rhinorrhea. Chest examination shows intercostal retractions along with bilateral, diffuse wheezes and expiratory rhonchi. The infectious agent of this patient's condition most likely has which of the following properties?
- (A) DNA genome
 - (B) Double-stranded nucleic acid genome
 - (C) Mature virion lacking viral polymerase
 - (D) Mediation of cell entry via a fusion protein
 - (E) Viability on surfaces for several weeks
36. A 17-year-old girl is brought to the emergency department 15 minutes after being stung by a bee. She has mild lightheadedness but no difficulty swallowing. Her temperature is 37.1°C (98.8°F), pulse is 100/min, respirations are 30/min, and blood pressure is 115/70 mm Hg. Physical examination shows no urticaria. Bilateral wheezing is heard on auscultation of the chest. Which of the following types of drugs is the most appropriate pharmacotherapy for this patient?
- (A) α_1 -Adrenergic agonist
 - (B) α_2 -Adrenergic agonist
 - (C) α_1 -Adrenergic antagonist
 - (D) β_2 -Adrenergic agonist
 - (E) β_2 -Adrenergic antagonist
37. A 30-year-old woman, gravida 2, para 0, aborta 1, at 28 weeks' gestation comes to the office for a prenatal visit. She has had one previous pregnancy resulting in a spontaneous abortion at 12 weeks' gestation. Today, her vital signs are within normal limits. Physical examination shows a uterus consistent in size with a 28-week gestation. Fetal ultrasonography shows a male fetus with no abnormalities. Her blood group is O, Rh-negative. The father's blood group is B, Rh-positive. The physician recommends administration of Rh₀(D) immune globulin to the patient. This treatment is most likely to prevent which of the following in this mother?
- (A) Development of natural killer cells
 - (B) Development of polycythemia
 - (C) Formation of antibodies to RhD
 - (D) Generation of IgM antibodies from fixing complement in the fetus
 - (E) Immunosuppression caused by RhD on erythrocytes from the fetus
38. A 52-year-old woman begins pharmacotherapy after being diagnosed with type 2 diabetes mellitus. Four weeks later, her hepatic glucose output is decreased, and target tissue glucose uptake and utilization are increased. Which of the following drugs was most likely prescribed for this patient?
- (A) Acarbose
 - (B) Glyburide
 - (C) Metformin
 - (D) Nateglinide
 - (E) Repaglinide

39. A sexually active 23-year-old man with multiple sex partners has dysuria and a yellow urethral exudate. Gram stain of the exudate shows numerous neutrophils, many that contain intracellular gram-negative diplococci. He has had three similar episodes of urethritis over the past 2 years. Which of the following properties of the infecting organism best explains the reinfection?
- (A) Antigenic variation
 - (B) Catalase
 - (C) Inhibition of B-lymphocyte function
 - (D) Inhibition of T-lymphocyte function
 - (E) Polysaccharide capsule
40. A 17-year-old girl is brought to the physician by her mother because she has not had a menstrual period for 6 months. The patient is unconcerned about the lack of menses. Menarche occurred at the age of 12 years, and menses had occurred at regular 28-day intervals until they became irregular 1 year ago. She is a member of her high school gymnastics team. She appears emaciated. She is 163 cm (5 ft 4 in) tall and weighs 40 kg (88 lb); BMI is 15 kg/m². Her pulse is 54/min, and blood pressure is 80/50 mm Hg. Which of the following is the most likely cause of this patient's amenorrhea?
- (A) Hyperthyroidism
 - (B) Hypogonadotropic hypogonadism
 - (C) Hypothyroidism
 - (D) Polycystic ovarian syndrome
 - (E) Prolactinoma

USMLE STEP 1 SAMPLE TEST QUESTIONS

BLOCK 2, ITEMS 41-80

41. A 49-year-old woman comes to the physician for a follow-up examination. She has a strong family history of coronary artery disease. Her blood pressure has ranged from 150/95 mm Hg to 130/85 mm Hg during the previous three visits within the past 2 months. Her blood pressure today is 140/90 mm Hg. Physical examination shows no other abnormalities. Laboratory studies show:

Cholesterol, total	290 mg/dL
HDL-cholesterol	40 mg/dL
LDL-cholesterol	190 mg/dL
Triglycerides	350 mg/dL

Treatment with atorvastatin and losartan is initiated. Which of the following serum findings is most likely to occur in this patient?

	HDL-cholesterol	Triglycerides
(A)	Decreased	decreased
(B)	Decreased	increased
(C)	Increased	decreased
(D)	Increased	increased
(E)	No change	no change

-
42. A 15-year-old girl comes to the physician because of a 3-month history of acne. Breast and pubic hair development began at the age of 12 years. Menarche occurred at the age of 14 years. Physical examination shows scattered open and closed comedones over the cheeks and forehead. Breast and pubic hair development are Tanner stage 5. Which of the following is the most likely underlying cause of this patient's acne?
- (A) Decreased parasympathetic stimulation to the sebaceous glands
 (B) Increased estrogen stimulation of the sebaceous glands
 (C) Increased responsiveness of the sebaceous glands to follicle-stimulating hormone
 (D) Increased sympathetic stimulation to the sebaceous glands
 (E) Stimulation of the sebaceous glands by androgens
43. A previously healthy 40-year-old man is brought to the emergency department because of constant substernal chest pain for 12 hours that is exacerbated by coughing and inspiration. The pain is relieved with sitting up and leaning forward. There is no family history of heart disease. His temperature is 38°C (100.4°F), pulse is 120/min, and blood pressure is 110/60 mm Hg. The lungs are clear to auscultation. Cardiac examination shows distant heart sounds. An ECG shows diffuse ST-segment elevation in all leads. An x-ray of the chest shows normal findings. The most likely cause of his condition is injury to which of the following tissues?
- (A) Aortic intima
 (B) Esophageal sphincter
 (C) Myocardium
 (D) Pericardium
 (E) Pleura

44. A 55-year-old man is brought to the emergency department because of shortness of breath and confusion for 4 hours. He has hypertension and chronic kidney disease requiring hemodialysis. An ECG shows low voltage with electrical alternans. Physical examination is most likely to show which of the following findings?

	Blood Pressure (mm Hg)	Pulse (/min)	Jugular Venous Pressure	Pulsus Paradoxus
(A)	85/60	120	increased	increased
(B)	85/60	120	increased	normal
(C)	85/60	120	normal	normal
(D)	120/80	80	increased	increased
(E)	120/80	80	normal	increased
(F)	120/80	80	normal	normal

45. A 54-year-old woman comes to the emergency department because of severe jaw pain since undergoing a painful dental procedure 1 day ago. The patient was prescribed codeine after the procedure and instructed to take the medication every 4 hours, but she has continued pain despite adherence to this analgesic regimen. Other members of her family also have experienced poor pain control with codeine. Which of the following is the most likely explanation for this therapeutic failure?
- (A) Decreased absorption of codeine
 (B) Decreased metabolism of codeine to morphine
 (C) Deficiency of κ receptors
 (D) Increased plasma protein-binding of codeine
 (E) Increased renal clearance of codeine
46. A 14-year-old girl with a 9-year history of type 1 diabetes mellitus is brought to the physician by her mother for a follow-up examination. She has been admitted to the hospital twice in the past 3 months because of diabetic ketoacidosis. She previously had been compliant with monitoring her blood glucose concentration and with her diet and insulin regimen. She acknowledges that, when she is with her peers, she eats whatever she wants and does not check her blood glucose concentration. She adds, "I'm embarrassed to inject myself in front of them." The physician is having a great deal of difficulty with her 15-year-old son who has been truant from school and sneaking out of the house. She says to the patient, "You should be ashamed for not taking care of yourself. We've all worked so hard to keep you healthy." Which of the following terms best describes the physician's reaction to the patient?
- (A) Countertransference
 (B) Identification with the aggressor
 (C) Projection
 (D) Splitting
 (E) Sublimation
47. A 23-year-old woman with bone marrow failure is treated with a large dose of rabbit antithymocyte globulin. Ten days later, she develops fever, lymphadenopathy, arthralgias, and erythema on her hands and feet. Which of the following is the most likely cause of these symptoms?
- (A) Cytokine secretion by natural killer cells
 (B) Eosinophil degranulation
 (C) Immune complex deposition in tissues
 (D) Polyclonal T-lymphocyte activation
 (E) Widespread apoptosis of B lymphocytes

48. A 25-year-old man is brought to the emergency department because of a 6-day history of fever, severe muscle pain, and diffuse, painful swelling of his neck, underarms, and groin area. The symptoms began after returning from a camping trip in New Mexico. He appears ill and lethargic and can barely answer questions. His temperature is 39.2°C (102.5°F), pulse is 120/min, respirations are 22/min, and blood pressure is 110/70 mm Hg. Physical examination shows generalized scattered black maculae. Examination of the right upper extremity shows an erythematous, solid, tender mass on the underside of the upper extremity just above the elbow; the mass is draining blood and necrotic material. The most effective antibiotic for this patient's disorder will interfere with which of the following cellular processes or enzymes?

(A) Cell wall synthesis
 (B) DNA helicase
 (C) Glucuronosyltransferase
 (D) Proteasomal degradation
 (E) Ribosomal assembly
 (F) Tetrahydrofolate reductase

49. A 42-year-old woman comes to the physician because of anxiety, tremor, and a 5-kg (11-lb) weight loss over the past 4 months despite good appetite. Physical examination shows fine thin hair, exophthalmos, goiter, and warm moist skin. Cardiac examination shows tachycardia and a widened pulse pressure. Which of the following sets of laboratory values is most likely in this patient's serum?

	Thyroid-stimulating Hormone	Total Thyroxine (T ₄)	Free Thyroxine	Thyroid-binding Globulin
(A)	↑	↑	↑	↑
(B)	↑	↑	normal	↓
(C)	↑	normal	↑	↓
(D)	↓	↑	↑	normal
(E)	↓	normal	normal	↑
(F)	↓	normal	normal	normal

50. A 29-year-old woman is prescribed carbamazepine for trigeminal neuralgia. She has a strong family history of osteoporosis. As a result, the physician also advises her to increase her intake of vitamin D. The most likely reason for this recommendation is that carbamazepine may affect which of the following pharmacokinetic processes?

(A) Absorption
 (B) Distribution
 (C) Excretion
 (D) Metabolism
 (E) Protein binding

51. Over 1 year, a study is conducted to assess the antileukemic activity of a new tyrosine kinase inhibitor in patients with chronic myeloid leukemia in blast crisis. All patients enrolled in the study are informed that they would be treated with the tyrosine kinase inhibitor. They are assigned to successive dose cohorts of 300 to 1000 mg/day of the drug. Six to eight patients are assigned to each dose. Treatment efficacy is determined based on the results of complete blood counts and bone marrow assessments conducted regularly throughout the study. This study is best described as which of the following?

(A) Case-control study
 (B) Crossover study
 (C) Open-labeled clinical trial
 (D) Randomized clinical trial
 (E) Single-blind, randomized, controlled trial

52. A 64-year-old man with non-Hodgkin lymphoma comes to the physician because of a 3-week history of progressive numbness in his hands and feet and weakness in his legs when he stands. He received his third course of chemotherapy 4 weeks ago. Physical examination shows areflexia. Which of the following drugs is the most likely cause of these adverse effects?

(A) Bleomycin
 (B) Cyclophosphamide
 (C) Cytarabine
 (D) Doxorubicin
 (E) Fluorouracil
 (F) Methotrexate
 (G) Vincristine

53. During an experiment, drug X is added to a muscle bath containing a strip of guinea pig intestinal smooth muscle. Agonists are added to the bath, and the resultant effects on muscle tension are shown in the table.

Agonist	Muscle Tension Before Drug X (g)	Muscle Tension After Drug X (g)
Vehicle	6.0	6.1
Acetylcholine	11.3	18.5
Norepinephrine	4.1	4.2

Which of the following types of drugs is most likely to produce effects most similar to those of drug X?

(A) α_1 -Adrenergic antagonist
 (B) β -Adrenergic antagonist
 (C) Cholinesterase inhibitor
 (D) Monoamine oxidase inhibitor
 (E) Muscarinic antagonist

54. A 42-year-old man comes to the physician for a follow-up examination. Four months ago, he underwent repair of a Dupuytren contracture. Physical examination shows decreased range of motion in the affected hand. The patient is upset that his hand has not fully healed, and he files a malpractice suit against the physician. Which of the following is the most likely precipitating factor in this patient's decision to file a malpractice suit?

(A) The patient's perception that the physician is incompetent
 (B) The patient's perception that the physician is uncaring
 (C) The patient's socioeconomic status
 (D) The physician's amount of experience in the medical field
 (E) The physician's inability to screen out problem patients

55. A 72-year-old woman comes to the physician because of a 2-month history of painless swelling of both ankles. She also reports shortness of breath with exertion and when lying down. She has been awakened from sleep by shortness of breath. She has not had chest pain. Her pulse is 96/min and regular, respirations are 24/min, and blood pressure is 128/76 mm Hg. Jugular venous pressure is 15 cm H₂O. Pulmonary examination shows crackles at both lung bases. Cardiac examination shows a regular rhythm and a soft S₃. A grade 3/6 holosystolic murmur is heard best at the apex, radiating to the axilla. There is 2+ pitting edema of the lower legs and ankles. Which of the following is most likely to confirm the diagnosis?

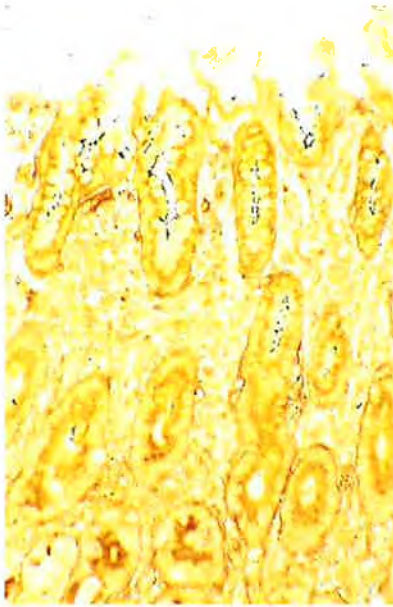
(A) Measurement of serum troponin I concentration
 (B) ECG
 (C) Exercise stress test
 (D) Echocardiography
 (E) Pulmonary artery catheterization

56. A 14-year-old boy is brought to the physician for a physical examination prior to participating in sports. He appears reluctant to remove his shirt for the examination, and says that he is embarrassed because he has grown breasts during the past year. He is at the 50th percentile for height and weight. Physical examination shows bilateral 1.5-cm fibroglandular masses located beneath the nipple-areolar complex and normal penis and testes. Pubic hair development is Tanner stage 3. Serum concentrations of gonadotropic hormones, estrogens, and testosterone are within the reference ranges. Which of the following is the most likely cause of this patient's breast enlargement?
- (A) Breast adenocarcinoma
 - (B) Estradiol-secreting Leydig cell tumor
 - (C) Peutz-Jeghers syndrome
 - (D) Seminiferous tubule dysgenesis (Klinefelter syndrome)
 - (E) Normal development
57. A 5-year-old boy is admitted to the hospital because of a 1-week history of fever and increasingly severe abdominal discomfort. At the age of 7 months, he was treated for osteomyelitis caused by *Aspergillus fumigatus*. He has been admitted to the hospital three times during the past 4 years for severe pneumonia. He appears moderately ill. His temperature is 39°C (102.2°F). Abdominal examination shows an enlarged, tender liver. Ultrasonography of the abdomen shows an intrahepatic abscess. Culture of the abscess fluid grows *Staphylococcus aureus*. Further analysis shows failure of the neutrophils to undergo an oxidative burst when exposed to *S. aureus*. This patient has an increased susceptibility to infection as a result of which of the following abnormalities?
- (A) Deficient leukocyte production
 - (B) Failure of leukocytes to migrate between endothelial cells
 - (C) Failure of leukocytes to roll along the endothelial surface
 - (D) Inability of leukocytes to ingest microorganisms
 - (E) Inability of leukocytes to kill intracellular microorganisms
58. A 22-year-old woman contacts a medical student and asks if he would like to join her for dinner. The student met the woman when he was assigned to her care during her 2-week hospitalization for treatment of major depressive disorder. He has not treated or seen the patient since she was discharged from the hospital. He is attracted to this former patient and would be interested in dating her. Which of the following is the most appropriate action by the medical student regarding this patient's invitation?
- (A) He can date her because he was a medical student, not a physician, when he contributed to her care
 - (B) He can date her because she is no longer his patient
 - (C) He can date her, but only after at least 1 year has passed since he treated her
 - (D) He cannot date her because she was once his psychiatric patient
 - (E) He cannot date her unless she agrees never to seek care at his hospital in the future
59. A 73-year-old woman comes to the physician because of a 2-month history of diffuse weakness and tingling of her arms and legs. Neurologic examination shows weakness of the extensor and flexor muscles of the lower extremities. Knee and ankle deep tendon reflexes are exaggerated. Sensation to vibration and position is decreased in all extremities, but the decrease is more prominent in the lower extremities than in the upper extremities. This patient most likely has a deficiency of which of the following vitamins?
- (A) Niacin
 - (B) Vitamin B₁ (thiamine)
 - (C) Vitamin B₂ (riboflavin)
 - (D) Vitamin B₆ (pyridoxine)
 - (E) Vitamin B₁₂ (cyanocobalamin)

60. A 45-year-old man comes to the physician because of right shoulder pain that began after he chopped wood 2 days ago. Examination of the right upper extremity shows no obvious bone deformities or point tenderness. The pain is reproduced when the patient is asked to externally rotate the shoulder against resistance; there is no weakness. In addition to the teres minor, inflammation of which of the following tendons is most likely in this patient?
- (A) Infraspinatus
 - (B) Pectoralis
 - (C) Subscapularis
 - (D) Supraspinatus
 - (E) Trapezius
61. A 54-year-old man comes to the physician for a follow-up examination 10 days after undergoing a stereotactic brain operation to remove a small tumor. The operation was successful. During the procedure, he was under conscious sedation. The patient recalls that at one point during the operation he experienced a sudden, intense feeling of overwhelming fear. Which of the following areas of the brain was most likely stimulated at that time?
- (A) Amygdala
 - (B) Hippocampus
 - (C) Mammillary body
 - (D) Prefrontal cortex
 - (E) Thalamus
62. A placebo-controlled clinical trial is conducted to assess whether a new antihypertensive drug is more effective than standard therapy. A total of 5000 patients with essential hypertension are enrolled and randomly assigned to one of two groups: 2500 patients receive the new drug and 2500 patients receive placebo. If the alpha is set at 0.01 instead of 0.05, which of the following is the most likely result?
- (A) Significant findings can be reported with greater confidence
 - (B) The study will have more power
 - (C) There is a decreased likelihood of a Type II error
 - (D) There is an increased likelihood of statistically significant findings
 - (E) There is an increased likelihood of a Type I error
63. A male stillborn is delivered at 32 weeks' gestation to a 30-year-old woman. The pregnancy was complicated by oligohydramnios. Examination of the stillborn shows the absence of a urethral opening. Which of the following additional findings is most likely in this stillborn?
- (A) Congenital diaphragmatic hernia
 - (B) Intralobar sequestration
 - (C) Pulmonary hypoplasia
 - (D) Situs inversus
 - (E) Tracheoesophageal fistula
64. A 33-year-old man undergoes a radical thyroidectomy for thyroid cancer. During the operation, moderate hemorrhaging requires ligation of several vessels in the left side of the neck. Postoperatively, serum studies show a calcium concentration of 7.5 mg/dL, albumin concentration of 4 g/dL, and parathyroid hormone concentration of 200 pg/mL. Damage to which of the following vessels caused the findings in this patient?
- (A) Branch of the costocervical trunk
 - (B) Branch of the external carotid artery
 - (C) Branch of the thyrocervical trunk
 - (D) Tributary of the internal jugular vein
 - (E) Tributary of the left brachiocephalic vein
 - (F) Tributary of the right brachiocephalic vein

65. A 42-year-old man comes to the physician for a follow-up examination 1 week after he passed a renal calculus. X-ray crystallographic analysis of the calculus showed calcium as the primary cation. Physical examination today shows no abnormalities. A 24-hour collection of urine shows increased calcium excretion. Which of the following is the most appropriate pharmacotherapy?
- (A) Carbonic anhydrase inhibitor
 - (B) $\text{Na}^+ - \text{Cl}^-$ symport inhibitor
 - (C) $\text{Na}^+ - \text{K}^+ - 2\text{Cl}^-$ symport inhibitor
 - (D) Osmotic diuretic
 - (E) Renal epithelial sodium channel inhibitor
66. A 55-year-old man comes to the physician because of a 2-week history of recurrent, widespread blister formation. Physical examination shows lesions that are most numerous in the flexural areas including the axillae and groin. The blisters do not break easily, and there are no oral lesions. These blisters are most likely the result of adhesion failure involving which of the following?
- (A) Basement membrane
 - (B) Dermal papillae
 - (C) Langerhans cells
 - (D) Melanocytes
 - (E) Merkel cells
67. A 24-year-old man is brought to the emergency department 40 minutes after he was involved in a motor vehicle collision. He was the unrestrained driver. He is conscious. Physical examination shows numerous lacerations and ecchymoses over the face. His vision is normal. Ocular, facial, and lingual movements are intact. The gag reflex is present. Sensation to pinprick is absent over the right side of the face anterior to the right ear, extending down along the full extent of the mandible to the chin. Sensation also is absent over the right side of the tongue. X-rays of the skull show fractures of the orbit, zygomatic arch, and infratemporal fossa. The most likely cause of these findings is a fracture affecting which of the following locations?
- (A) Foramen lacerum
 - (B) Foramen ovale
 - (C) Foramen rotundum
 - (D) Foramen spinosum
 - (E) Jugular foramen
68. A 55-year-old man who is a business executive is admitted to the hospital for evaluation of abdominal pain. He is polite to the physician but berates the nurses and other staff. The patient's wife and two of his three adult children arrive for a visit. The patient says with disgust that the missing child is and always has been worthless. Which of the following is the most likely explanation for this patient's behavior?
- (A) Countertransference
 - (B) Projection
 - (C) Projective identification
 - (D) Reaction formation
 - (E) Splitting

69. A 3-year-old boy with chronic granulomatous disease is brought to the physician because of a 3-week history of fever and warm, red lumps under both arms. His temperature is 38°C (100.4°F). Physical examination shows enlarged, 3-cm, erythematous axillary lymph nodes bilaterally. On palpation, the nodes are tender, fluctuant, and movable. Examination of a fine-needle aspirate from one of the nodes shows gram-positive cocci in clusters. Cultures of the aspirate grow yellow, β -hemolytic colonies that are catalase and coagulase positive. A polymerase chain reaction test shows *mecA*-positive organisms. Which of the following is the most appropriate pharmacotherapy for this patient?
- (A) Cefazolin
 - (B) Ciprofloxacin
 - (C) Penicillin G
 - (D) Rifampin
 - (E) Vancomycin
-



70. An otherwise healthy 45-year-old man comes to the physician because of a 3-week history of progressive epigastric heartburn and a 4.5-kg (10-lb) weight loss. The pain tends to be more severe at night and occurs 1 to 3 hours after meals during the day. He has had similar episodes with lesser intensity during the past year. Abdominal examination shows tenderness to deep palpation. Test of the stool for occult blood is positive. Endoscopy shows a bleeding 3-cm ulcer in the antrum of the stomach. A photomicrograph of Steiner silver-stained tissue (400x) from a biopsy of the gastric mucosa adjacent to the ulcer is shown. Which of the following processes is most likely to be involved?
- (A) Elaboration of proteases and urease with local tissue destruction
 - (B) Hyperacidity and gastric ulcer development
 - (C) Ingestion of preformed toxins in contaminated well water
 - (D) Spirochete invasion of gastric cells

71. A 10-year-old girl is brought to the office by her mother because her school nurse thinks that she may have Marfan syndrome. She is at the 95th percentile for height and 25th percentile for weight. Physical examination shows a narrow palate with dental crowding, long slender extremities, and joint laxity. Molecular testing for *FBN1* shows a single nucleotide difference that does not change the amino acid at that locus. Her mother is 163 cm (5 ft 4 in) tall. There is no clinical evidence of Marfan syndrome in the mother, but she has the same single nucleotide change as the patient. The same nucleotide change is found in 15 of 200 individuals without Marfan syndrome. Which of the following best describes the single nucleotide change in the patient and her mother?

(A) It is a disease-causing mutation in the patient and her mother
 (B) It is a polymorphism
 (C) It is a sequence variant of unknown significance
 (D) It will change the folding of the protein
 (E) It will result in a truncated protein

72. A previously healthy 40-year-old woman is brought to the emergency department by her husband because of a 2-day history of fever, lethargy, and confusion. Her temperature is 38°C (100.4°F), pulse is 80/min, respirations are 18/min, and blood pressure is 140/90 mm Hg. Physical examination shows scattered petechiae and ecchymoses over the lower extremities. Neurologic examination shows moderate generalized motor weakness. She is oriented to person but not to place or time. Laboratory studies show:

Hemoglobin	9 g/dL
Hematocrit	27%
Leukocyte count	8000/mm ³ with a normal differential
Platelet count	15,000/mm ³
Prothrombin time	12 sec (INR=1.1)
Partial thromboplastin time	30 sec
Serum	
Urea nitrogen	25 mg/dL
Lactate dehydrogenase	1000 U/L

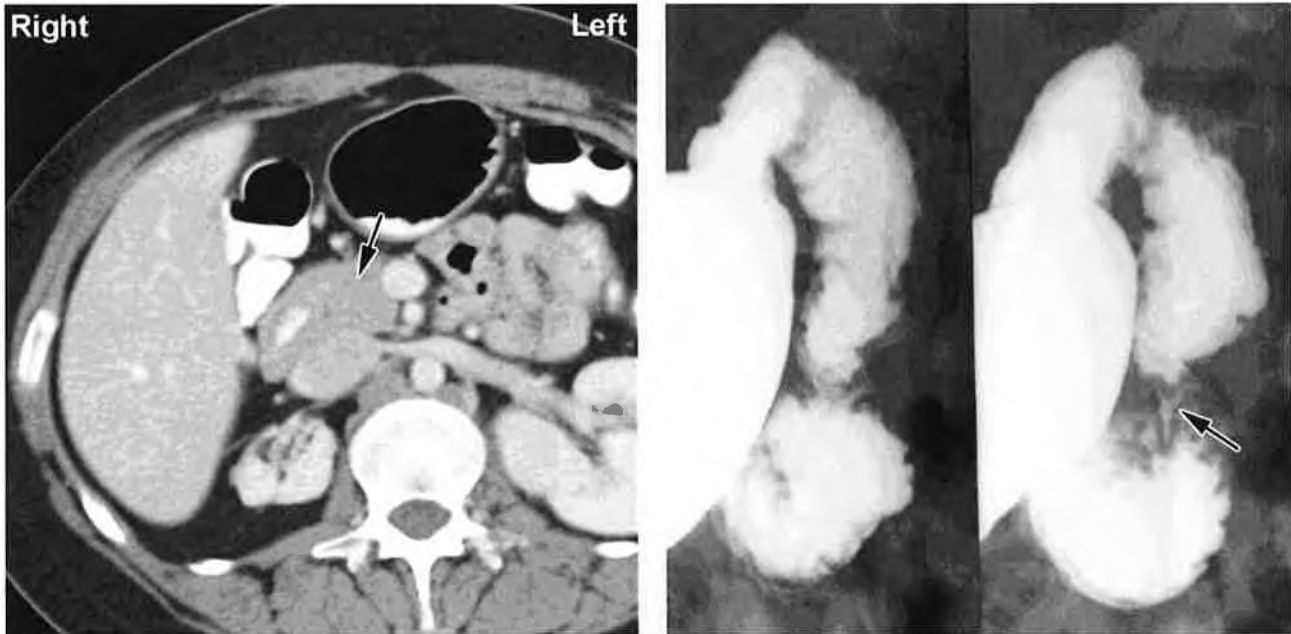
A peripheral blood smear shows 3+ polychromasia and 3+ schistocytes. Urine and blood cultures grow no organisms. A chest x-ray shows no abnormalities. Which of the following is the most likely diagnosis?

(A) Acute myeloid leukemia
 (B) Autoimmune hemolytic anemia
 (C) Thrombotic thrombocytopenic purpura
 (D) Toxic shock syndrome
 (E) von Willebrand disease

73. A 17-year-old girl has never had a menstrual period. Physical examination shows a normal female body habitus, normal breast development, and normal appearing external genitalia. She has no axillary or pubic hair. The patient refuses to have a pelvic or rectal examination. Which of the following is the most likely explanation for the clinical presentation?

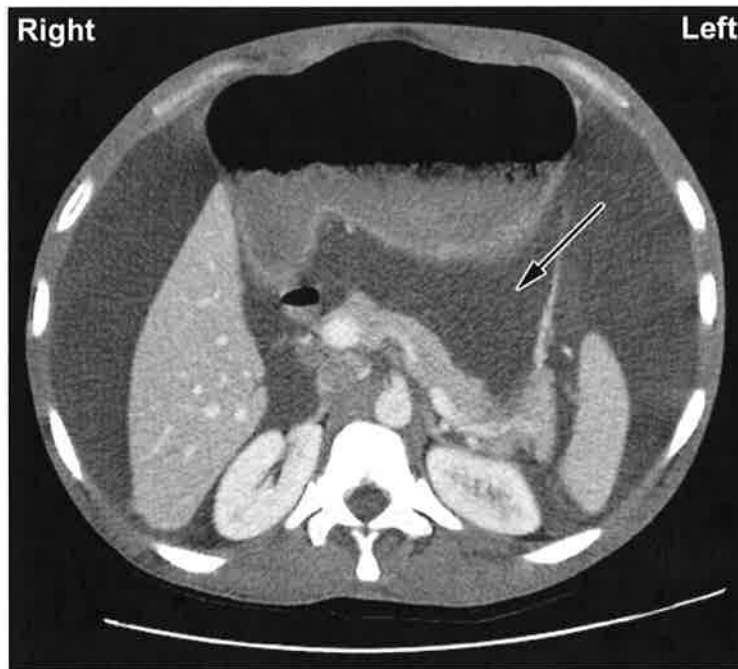
(A) Androgen insensitivity
 (B) Congenital adrenal hyperplasia
 (C) Ectodermal dysplasia
 (D) A psychiatric disorder
 (E) A sex chromosome mosaicism

74. A 12-year-old girl is brought to the physician because of a 2-month history of intermittent yellowing of the eyes and skin. Physical examination shows no abnormalities except for jaundice. Her serum total bilirubin concentration is 3 mg/dL, with a direct component of 1 mg/dL. Serum studies show a haptoglobin concentration and AST and ALT activities that are within the reference ranges. There is no evidence of injury or exposure to toxins. Which of the following additional findings is most likely in this patient?
- (A) Decreased activity of UDP glucuronosyltransferase
 - (B) Gallstones
 - (C) Increased hemolysis
 - (D) Increased serum alkaline phosphatase activity
 - (E) Ineffective erythropoiesis



75. A 47-year-old woman comes to the emergency department because of a 2-week history of intermittent abdominal pain, nausea, and vomiting. She has had similar episodes sporadically during the past 4 years. Physical examination shows dehydration, jaundice, and upper abdominal distention. Laboratory studies show hyperbilirubinemia. A CT scan and upper gastrointestinal series of the abdomen with oral contrast are shown; the arrows indicate the abnormality. Which of the following is the most likely cause of these findings?
- (A) Annular pancreas
 - (B) Cirrhosis of the liver
 - (C) Duodenal constriction by the portal vein
 - (D) Duodenal constriction by the superior mesenteric artery
 - (E) Pyloric stenosis

76. An 8-year-old boy is brought to the office by his mother because of a 3-day history of fever, sore throat, and itchy eyes. He just returned from a weeklong summer camp that included hiking trips and swimming lessons in the camp-owned swimming pool. He has no history of major medical illness and receives no medications. He appears tired. His temperature is 39.4°C (102.9°F); other vital signs are within normal limits. Physical examination shows conjunctival injection and discharge and oropharyngeal erythema. The public health department reports an outbreak of similar symptoms among the other campers and camp volunteers. Which of the following is the most likely cause of this patient's symptoms?
- (A) Adenovirus
 - (B) Cytomegalovirus
 - (C) Epstein-Barr virus
 - (D) Influenza virus
 - (E) West Nile virus



77. A 36-year-old man with profound intellectual disability is brought to the physician by staff at his facility because of increasing abdominal girth during the past 2 weeks. He is unable to speak, and no medical history is currently available. Physical examination shows a protuberant abdomen with a fluid wave and shifting dullness. There are no signs of trauma to the area. Laboratory studies show no abnormalities. A CT scan of the abdomen is shown. Fluid is present in which of the following areas as indicated by the arrow?
- (A) Epiploic foramen
 - (B) Gastrosplenic ligament
 - (C) Hepatorenal pouch (of Morison)
 - (D) Omental bursa (lesser sac)
 - (E) Sulcus pericolicus

78. A study is designed to evaluate the feasibility of acupuncture in children with chronic headaches. Sixty children with chronic headaches are recruited for the study. In addition to their usual therapy, all children are treated with acupuncture three times a week for 2 months. Which of the following best describes this study design?
- (A) Case-control
(B) Case series
(C) Crossover
(D) Cross-sectional
(E) Historical cohort
(F) Randomized clinical trial
79. A 56-year-old man comes to the emergency department because of a 4-day history of colicky right flank pain that radiates to the groin and hematuria. Ultrasound examination of the kidneys shows right-sided hydronephrosis and a dilated ureter. Which of the following is most likely to be found on urinalysis?
- (A) Erythrocyte casts
(B) Glucose
(C) Leukocyte casts
(D) Oval fat bodies
(E) Uric acid crystals
80. A 62-year-old man comes to the physician for a follow-up examination after he was diagnosed with chronic inflammatory interstitial pneumonitis. Following pulmonary function testing, a biopsy specimen of the affected area of the lungs is obtained. Compared with a healthy man, analysis of this patient's biopsy specimen is most likely to show which of the following patterns of changes in the cell populations of alveoli?

	Type I Pneumocytes	Type II Pneumocytes	Fibroblasts
(A)	↑	↑	↑
(B)	↑	↑	↓
(C)	↑	↓	↑
(D)	↑	↓	↓
(E)	↓	↑	↑
(F)	↓	↑	↓
(G)	↓	↓	↑
(H)	↓	↓	↓

USMLE STEP 1 SAMPLE TEST QUESTIONS

BLOCK 3, ITEMS 81-117

81. Six healthy subjects participate in a study of muscle metabolism during which hyperglycemia and hyperinsulinemia is induced. Muscle biopsy specimens obtained from the subjects during the resting state show significantly increased concentrations of malonyl-CoA. The increased malonyl-CoA concentration most likely directly inhibits which of the following processes in these subjects?
- (A) Fatty acid oxidation
 - (B) Fatty acid synthesis
 - (C) Gluconeogenesis
 - (D) Glycogenolysis
 - (E) Glycolysis
 - (F) Oxidative phosphorylation
82. A 72-year-old woman who has smoked 20 cigarettes daily for the past 38 years begins using eyedrops for glaucoma. Three days later, she has a marked increase in shortness of breath while walking up a flight of stairs. Which of the following drugs is the most likely cause of the development of shortness of breath in this patient?
- (A) Acetazolamide
 - (B) Apraclonidine
 - (C) Epinephrine
 - (D) Latanoprost
 - (E) Timolol
83. A 54-year-old man comes to the physician because of episodes of fainting for 3 months. He also has had difficulty performing daily tasks because he is easily fatigued. He had a myocardial infarction 12 years ago. His pulse is 40/min, respirations are 18/min, and blood pressure is 138/85 mm Hg. Physical examination shows evidence of cannon *a* waves. An ECG shows a P-wave rate of 90/min, and an R-wave rate of 40/min, with no apparent relation between the two. Which of the following is the most likely diagnosis?
- (A) First-degree atrioventricular block
 - (B) Right bundle branch block
 - (C) Second-degree atrioventricular block, type I
 - (D) Second-degree atrioventricular block, type II
 - (E) Third-degree atrioventricular block
84. A 15-year-old boy is brought to the emergency department by his parents because of a 2-hour history of confusion and agitation. He also has had fever, headache, stiff neck, and vomiting since he returned from summer camp 2 days ago. His parents say he does not use illicit drugs. On arrival, he is combative and there is evidence of hallucinations. His temperature is 40°C (104°F), pulse is 80/min, respirations are 17/min, and blood pressure is 100/70 mm Hg. A lumbar puncture is performed. Results of cerebrospinal fluid analysis show cysts and trophozoites. The most likely portal of pathogen entry into this patient's central nervous system is which of the following?
- (A) Cavernous sinus
 - (B) Facial nerve
 - (C) Frontal sinus
 - (D) Mastoid sinus
 - (E) Olfactory nerve
 - (F) Trigeminal nerve

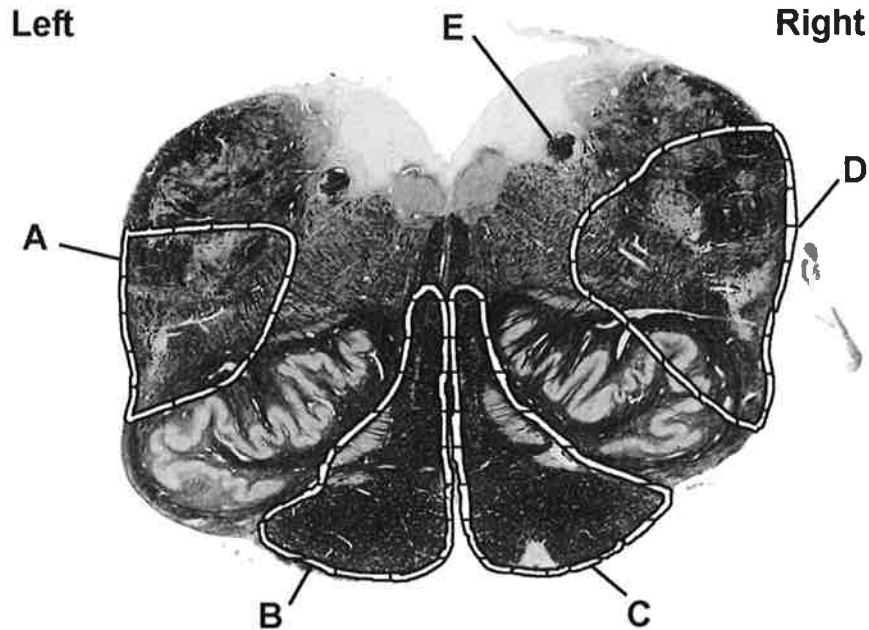
85. A 42-year-old woman comes to the physician for a routine examination. She says that she has felt well except for occasional episodes of constipation, abdominal discomfort, and mild fatigue. She was treated for a renal calculus 10 years ago and was told she had a "lazy gallbladder." Her pulse is 82/min, and blood pressure is 150/80 mm Hg. Physical examination shows no other abnormalities. Laboratory studies show:

Erythrocyte count	3 million/mm ³
Serum	
K ⁺	4.5 mEq/L
Cl ⁻	107 mEq/L
Ca ²⁺	12 mg/dL
Phosphorus	2.2 mg/dL
Alkaline phosphatase	95 U/L

The most likely cause of this patient's condition is a small, well-defined nodule in which of the following locations?

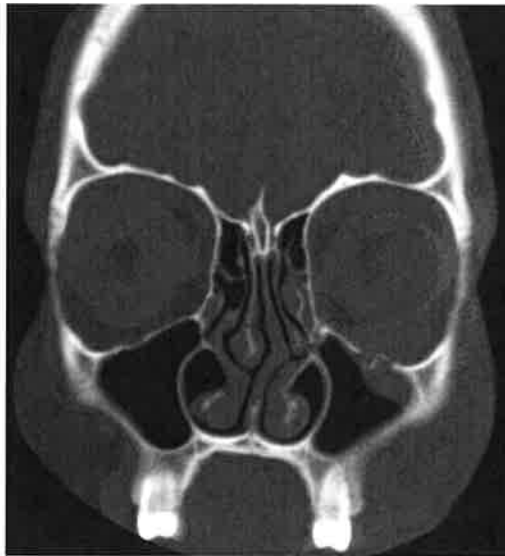
- (A) Adrenal gland
 - (B) Anterior pituitary gland
 - (C) Gallbladder
 - (D) Kidney
 - (E) Parathyroid gland
 - (F) Thymus
-
86. A new severe respiratory illness caused by a newly identified virus is discovered. Which of the following properties of a killed vaccine relative to a live vaccine is the most appropriate rationale for developing a killed vaccine for this illness?
- (A) Avoids the concern for reversion to virulence
 - (B) Develops more rapid protective immunity
 - (C) Is less likely to require subsequent boosters for lifelong immunity
 - (D) Is most likely to generate mucosal immunity
 - (E) Requires little safety monitoring to ensure inactivation
87. A 72-year-old woman comes to the physician because of a 3-day history of fever, shortness of breath, difficulty swallowing, chest pain, and cough. She is frail. Physical examination shows tachypnea and equal pulses bilaterally. Percussion of the chest shows dullness over the right lower lung field. Laboratory studies show arterial hypoxemia and decreased PCO₂. A chest x-ray shows an area of opacification in the lower region of the right lung. Which of the following is the most likely cause of this patient's condition?
- (A) Alveolar proteinosis
 - (B) Aspiration
 - (C) Cigarette smoking
 - (D) Emphysema
 - (E) Vasculitis
88. A 25-year-old woman comes to the office because of a 6-month history of increasingly severe low back pain and heavy menses. Her temperature is 37.1°C (98.8°F), pulse is 75/min, respirations are 13/min, and blood pressure is 115/79 mm Hg. Physical examination shows no abnormalities. An endometrial biopsy specimen shows regular tubular endometrial glands with abundant mitotic figures in the endometrial glands and stroma. Which of the following proteins or enzymes regulate the progression of cells into this phase of this patient's menstrual cycle?
- (A) AMP-dependent kinases
 - (B) Cyclin-dependent kinases
 - (C) Hexokinases
 - (D) Lipid kinases
 - (E) Urokinases

89. A 72-year-old woman is brought to the emergency department by her husband because of a 1-hour history of difficulty walking and speaking. The husband says that she was well last night but when she awoke this morning, she had difficulty getting out of bed and her speech was slurred. She has a 20-year history of type 2 diabetes mellitus well controlled with medication and diet. She is alert and oriented and is able to follow commands and respond verbally, but she has impaired speech. Her pulse is 80/min, respirations are 16/min, and blood pressure is 142/88 mm Hg. Physical examination shows left-sided hemiparesis. The tongue deviates to the right when protruded. Sensation to pinprick and temperature is normal, and proprioception and sensation to light touch are absent over the left upper and lower extremities. Which of the following labeled sites in the photograph of a cross section of a normal brain stem is most likely damaged in this patient?



90. A 4-year-old boy is brought to the physician because of slow growth during the past year. He has had recurrent urinary tract infections since the age of 1 year. He is at the 10th percentile for height and 25th percentile for weight. Physical examination shows pallor. Laboratory studies show a normochromic, normocytic anemia and increased serum concentrations of urea nitrogen and creatinine. Urinalysis shows a low specific gravity. Which of the following sets of additional serum findings is most likely in this patient?

	Calcium	Inorganic Phosphorus	1,25-Dihydroxycholecalciferol	Erythropoietin
(A)	↑	↑	↑	↓
(B)	↑	↑	↓	↓
(C)	↑	↓	↓	↑
(D)	↓	↑	↑	↓
(E)	↓	↑	↓	↓
(F)	↓	↓	↑	↑



91. A 42-year-old woman is brought to the emergency department because of double vision that began 20 minutes after she fell from her horse and landed on the left side of her face. Examination of the face shows ecchymoses over the left zygomatic arch. A CT scan of the head is shown. Which of the following arteries is at greatest risk for injury in this patient?
- (A) Facial
 - (B) Frontal
 - (C) Infraorbital
 - (D) Lacrimal
 - (E) Ophthalmic
-
92. A previously healthy 24-year-old woman who is a college student comes to the office because of a 6-month history of abdominal bloating, upper abdominal discomfort, and constipation. The symptoms are more severe when she is preparing for examinations but improve after bowel movements. She takes no medications. She does not smoke or use illicit drugs. She drinks alcoholic beverages occasionally. She is 160 cm (5 ft 3 in) tall and weighs 57 kg (125 lb); BMI is 22 kg/m². Her pulse is 72/min, and blood pressure is 100/72 mm Hg. Physical examination, including digital rectal examination, shows no other abnormalities. A complete blood count and serum electrolyte concentrations are within the reference ranges. A urease breath test result is negative. Upper and lower endoscopies show no abnormalities. Which of the following is the most appropriate pharmacotherapy for this patient?
- (A) Azathioprine
 - (B) Infliximab
 - (C) Lubiprostone
 - (D) Mesalamine
 - (E) Sulfasalazine
93. A 32-year-old man is brought to the emergency department 30 minutes after being struck by a car while driving his motorcycle. He reports severe pelvic pain. On examination, there is bruising of the perineum and pain is elicited with motion of his pelvis. Blood is noted at the urethral meatus. There is no other penile trauma. A plain x-ray shows a fracture of the superior pubic ramus and retrograde urethrography is done to evaluate for a urethral disruption. Which of the following portions of the urethra would be at greatest risk for injury in this patient?
- (A) Intramural (pre-prostatic)
 - (B) Membranous
 - (C) Prostatic
 - (D) Spongy



94. A 2-year-old boy is brought to the office by his mother because of a 1-day history of severe pain, swelling, and redness of his left thumb. The mother does not recall any trauma to the area. She says he has been eating poorly during this period, but otherwise he has been behaving normally. He has no history of major medical illness and receives no medications. He appears tearful. He is at the 90th percentile for length and 80th percentile for weight. His temperature is 37.7°C (99.8°F), pulse is 100/min, respirations are 20/min, and blood pressure is 100/50 mm Hg. Physical examination shows an oral vesicle, cervical lymphadenopathy, and the findings in the photograph. Which of the following types of infectious agents is the most likely cause of the findings in this patient's finger?
- (A) DNA virus
 - (B) Gram-negative bacterium
 - (C) Gram-positive bacterium
 - (D) RNA virus
 - (E) Yeast
-
95. A 46-year-old woman with active ankylosing spondylitis comes to the office for a follow-up examination. The use of various conventional nonsteroidal anti-inflammatory drugs has been ineffective. Sulfasalazine treatment also has not resulted in improvement. The most appropriate next step in treatment is administration of a drug that inhibits which of the following?
- (A) CD20
 - (B) Cyclooxygenase-2
 - (C) Cytotoxic T-lymphocyte antigen 4
 - (D) Epidermal growth factor
 - (E) Interleukin-1 (IL-1)
 - (F) Tumor necrosis factor α
96. During a study of renal glomeruli, a healthy animal kidney is kept in a vascular bath preparation at a constant afferent arterial pressure of 100 mm Hg. If the efferent arteriole is constricted with a vascular clamp, which of the following Starling forces is most likely to change in the glomeruli?
- (A) Decreased filtration coefficient (K_f)
 - (B) Decreased hydrostatic pressure
 - (C) Decreased oncotic pressure
 - (D) Increased hydrostatic pressure
 - (E) Increased oncotic pressure

97. A 67-year-old woman is brought to the emergency department 30 minutes after she had a generalized tonic-clonic seizure. Her family says that she seemed mildly confused before her eyes rolled backward and she had the onset of uncontrollable jerking movements of her arms and legs and loss of consciousness. During the seizure, she passed urine and bit her tongue. At the scene, her vital signs were within normal limits. She has a 6-month history of a 7-kg (15-lb) weight loss despite no changes in appetite. She received the diagnosis of small cell carcinoma of the lung last week and has not begun treatment. She has hypertension well controlled with lisinopril. On arrival, she is awake but does not respond to verbal stimuli. She is not in distress. Her temperature is 37°C (98.6°F), pulse is 70/min, and blood pressure is 130/88 mm Hg while supine. Examination shows no abnormalities. Laboratory studies show:

Serum	
Na ⁺	115 mEq/L
K ⁺	4 mEq/L
Cl ⁻	81 mEq/L
HCO ₃ ⁻	25 mEq/L
Urea nitrogen	9 mg/dL
Glucose	102 mg/dL
Creatinine	0.6 mg/dL
Urine	
Sodium	60 mEq/L
Potassium	20 mEq/L
Osmolality	900 mOsmol/kg H ₂ O

Which of the following is the most likely diagnosis?

- (A) Adrenal insufficiency
 (B) Diuretic abuse
 (C) Heart failure
 (D) Syndrome of inappropriate secretion of ADH (vasopressin)
 (E) Water intoxication
-
98. A 23-year-old woman comes to the physician for genetic counseling prior to conception. Her brother and maternal uncle had Duchenne muscular dystrophy (DMD) and died at the ages of 28 and 17 years, respectively. Genetic analysis was not performed on either relative prior to death. Serum studies show a muscle creatine kinase concentration of 120 U/L (N=22–198). The patient's 50-year-old mother has a serum muscle creatine kinase concentration of 300 U/L. Which of the following is the most appropriate assessment of this patient's carrier status for this disease?
- (A) The patient has a 50% risk for developing DMD
 (B) The patient has a 50% risk of having a child with DMD
 (C) The patient is a carrier of the disease based on her family history of DMD
 (D) The patient is not a carrier of the DMD based on her normal creatine kinase concentration
 (E) The patient's DMD carrier status is uncertain because of random X inactivation
99. A randomized controlled trial is conducted to assess the risk for development of gastrointestinal adverse effects using azithromycin compared with erythromycin in the treatment of pertussis in children. Of the 100 children with pertussis enrolled, 50 receive azithromycin, and 50 receive erythromycin. Results show vomiting among 5 patients in the azithromycin group, compared with 15 patients in the erythromycin group. Which of the following best represents the absolute risk reduction for vomiting among patients in the azithromycin group?
- (A) 0.1
 (B) 0.2
 (C) 0.33
 (D) 0.67
 (E) 0.8

100. A 35-year-old woman comes to the office because of a 3-day history of severe right back pain. She has not had any fever, chills, or weight loss. She has no history of major medical illness. Musculoskeletal and neurologic examinations show no abnormalities. When told that her examination is normal, the patient becomes tearful and demands an MRI of her back because her mother just died from breast cancer metastatic to bone and she fears that she may also have cancer. The patient already contacted her insurance company, who told her that if she has neurologic abnormalities an MRI may be covered by her plan. The patient asks the physician to order the MRI indicating that she has neurologic findings. Which of the following is the most appropriate initial action by the physician?
- (A) Advise the patient to change insurance companies as soon as she is able so that she can receive more comprehensive medical care
 - (B) Explain that the patient does not need the MRI and that it is not appropriate to misrepresent her examination findings
 - (C) Immediately inform the patient's insurance company about what the patient has asked the physician to do
 - (D) Order the MRI as the patient requests
 - (E) Recommend that the patient pay for the MRI out-of-pocket in order to ease her worry
101. A 6-day-old breast-fed boy is brought to the emergency department by his mother because of poor weight gain and irritability since delivery, and a 2-hour history of vomiting. Physical examination shows jaundice and hepatomegaly. A reducing substance test result of the urine is positive, and a glucose oxidase test result is negative. The concentration of which of the following metabolites in liver is most likely increased in this patient?
- (A) Fructose 1,6-bisphosphate
 - (B) Galactose 1-phosphate
 - (C) Glucose 1-phosphate
 - (D) Glucose 6-phosphate
102. A 14-year-old boy is brought to the physician because of a 2-day history of a sore throat and fever that peaks in the late afternoon. He also has a 1-week history of progressive fatigue. He recently began having unprotected sexual intercourse with one partner. He appears ill. His temperature is 39°C (102.2°F). Physical examination shows cervical lymphadenopathy and pharyngeal erythema with a creamy exudate. Which of the following is the most likely diagnosis?
- (A) Candidiasis
 - (B) Herpangina
 - (C) Infectious mononucleosis
 - (D) Mumps
 - (E) Syphilis
103. In a cohort study of elderly women, the relative risk ratio for hip fractures among those who exercise regularly is 1.2 (95% confidence interval of 1.1 to 1.8). Which of the following is the most appropriate conclusion about the effect of regular exercise on the risk for hip fracture?
- (A) Statistically nonsignificant increase in risk
 - (B) Statistically nonsignificant overall decrease in risk
 - (C) Statistically significant overall decrease in risk
 - (D) Statistically significant overall increase in risk



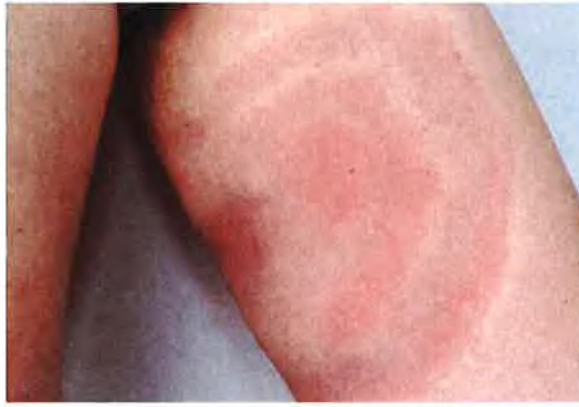
104. A 12-year-old boy is brought to the physician by his mother because of a 1-month history of pain below the left knee. His mother says, "He can usually walk around, but he hasn't been able to play in any of his soccer games since this all began." Examination of the left knee shows warmth, swelling, and tenderness. An x-ray of the knee is shown. Which of the following structures is attached to the abnormal anterior tibial area?
- (A) Anterior cruciate ligament
 - (B) Gastrocnemius muscle
 - (C) Patellar ligament
 - (D) Popliteus muscle
 - (E) Posterior cruciate ligament
 - (F) Soleus muscle
-
105. A 22-year-old woman comes to the office because of a 3-day history of cold symptoms and a 1-week history of progressive fatigue. Six weeks ago, she received a kidney transplant from a living, related donor. Immediately after the operation, she received monoclonal anti-CD3 therapy. Current medications are azathioprine, cyclosporine, and prednisone. Her temperature is 39°C (102.2°F). Physical examination shows a well-healed surgical scar. Serum studies show that her urea nitrogen and creatinine concentrations have tripled. A diagnosis of allograft rejection is suspected. In addition, this patient's clinical presentation is best explained by an infection with which of the following agents?
- (A) Adenovirus
 - (B) BK virus
 - (C) Epstein-Barr virus
 - (D) Herpes simplex virus
 - (E) Varicella-zoster virus

106. A new test to detect the presence of malarial antibodies by ELISA is evaluated in 100 patients with active untreated malaria proven by demonstration of blood-borne parasites and in 100 patients with no history of infection. Results of testing are shown:

		Malaria		
		Present	Absent	
ELISA Test Results	Positive	75	5	80
	Negative	25	95	120
		100	100	200

Which of the following is the specificity of this test?

- (A) 65%
 (B) 71%
 (C) 75%
 (D) 94%
 (E) 95%
-
107. A 30-year-old woman comes to the physician because of a 2-day history of abdominal pain. She has a history of recurrent upper respiratory tract infections, sinusitis, and pancreatitis. She has thick nasal secretions. She says that her sweat is salty and crystallizes on her skin. Her vital signs are within normal limits. Physical examination shows epigastric tenderness. Genetic testing for the 36 most common mutations shows a detectable mutation (G551D) in one allele of the *CFTR* gene. Which of the following best explains this patient's clinical phenotype?
- (A) Loss of heterozygosity of the *CFTR* gene has occurred in the pancreas
 (B) Only one G551D allele is needed in *CFTR*
 (C) The patient is a *CFTR* obligate carrier
 (D) The patient's *CFTR* mutation is unrelated to her clinical phenotype
 (E) The second *CFTR* mutation was not detected by the testing obtained
108. A 52-year-old man is brought to the emergency department 30 minutes after he had an episode of chest pain radiating to his jaw while shoveling snow. His pulse is 80/min, and blood pressure is 130/70 mm Hg. The lungs are clear to auscultation. Cardiac examination shows an S₄. While undergoing an ECG, the patient says that he feels the chest pain returning. The most appropriate immediate treatment is a drug with which of the following mechanisms of action?
- (A) Increases cAMP concentration
 (B) Increases nitric oxide concentration
 (C) Inhibits potassium flux
 (D) Inhibits sodium flux
109. A technician wants to determine whether cytomegalovirus (CMV) DNA is present in the blood of a bone marrow transplant recipient. DNA purified from the leukocytes of the patient is reacted in a mixture containing oligonucleotides specific for CMV DNA, thermostable DNA polymerase, and nucleotides. Repetitive cycles of heating and cooling are performed, and the reaction product is detected by gel electrophoresis. The technician most likely used which of the following laboratory procedures on this patient's blood?
- (A) Northern blotting
 (B) Polymerase chain reaction
 (C) Reverse transcription
 (D) Southern blotting
 (E) Western blotting



110. A 16-year-old boy comes to the physician because of a rash on his left inner thigh that first appeared 2 days after he returned from a hunting trip with friends in Minnesota. A photograph of the rash is shown. Without treatment, this patient is at increased risk for which of the following?
- (A) Carditis
 - (B) Glomerulonephritis
 - (C) Hepatitis
 - (D) Pancreatitis
 - (E) Thrombocytopenia
-
111. After being severely beaten and sustaining a gunshot wound to the abdomen, a 42-year-old woman undergoes resection of a perforated small bowel. During the operation, plastic reconstruction of facial fractures, and open reduction and internal fixation of the left femur are also done. Thirty-six hours postoperatively, she is awake but not completely alert. She is receiving intravenous morphine via a patient-controlled pump. She says that she needs the morphine to treat her pain, but she is worried that she is becoming addicted. She has no history of substance use disorder. She drinks one to two glasses of wine weekly. Which of the following initial actions by the physician is most appropriate?
- (A) Reassure the patient that her chance of becoming addicted to narcotics is minuscule
 - (B) Maintain the morphine, but periodically administer intravenous naloxone
 - (C) Switch the patient to oral acetaminophen as soon as she can take medication orally
 - (D) Switch the patient to intramuscular lorazepam
 - (E) Switch the patient to intravenous phenobarbital
112. A 51-year-old man comes to the office because of a 6-month history of a lump on his tongue that is interfering with his speech and eating; he also has had a 6.8-kg (15-lb) weight loss during this period. He has smoked 1 pack of cigarettes daily and has consumed six 12-oz bottles of beer on weekend nights during the past 30 years. His vital signs are within normal limits. Physical examination shows a 1.5-cm mass on the apex of the tongue. Further evaluation of the mass confirms squamous cell carcinoma. It is most appropriate to evaluate which of the following lymph nodes first for evidence of metastasis in this patient?
- (A) Inferior deep cervical
 - (B) Parotid
 - (C) Retropharyngeal
 - (D) Submental
 - (E) Superior deep cervical

113. A 31-year-old woman comes to the physician because of a 2-week history of malaise, nausea, vomiting, and decreased appetite. She is a known user of intravenous heroin. She appears chronically ill. She is 165 cm (5 ft 5 in) tall and weighs 47 kg (103 lb); BMI is 17 kg/m². Her temperature is 36.7°C (98.1°F), pulse is 90/min, respirations are 18/min, and blood pressure is 114/68 mm Hg. Physical examination shows scleral icterus and a liver span of 16 cm. The spleen is not palpable. Serum studies show:

Total bilirubin	3.2 mg/dL
AST	774 U/L
ALT	820 U/L
HIV antibody	negative
Hepatitis B surface antigen	negative
Hepatitis B surface antibody	positive
Anti-hepatitis B core antibody	positive
Hepatitis B DNA	negative
Anti-hepatitis C virus	positive
Hepatitis C RNA	positive

Which of the following is the most likely outcome of this patient's infection?

- (A) Complete resolution of infection
 (B) Latent infection with intermittent viremia
 (C) Lifelong persistent infection
 (D) Patient death from acute infection
-
114. A 57-year-old man receives radiation therapy for a squamous cell carcinoma of the lung. Despite therapy, the tumor progressively increases in size, and he dies 6 months later. His tumor cells contain a point mutation in the p53 gene (*TP53*), leading to an inactive gene product. Based on this finding, the progressive tumor growth despite irradiation therapy is most likely to be related to a defect in cell cycle arrest in which of the following phases of the cell cycle?
- (A) G₀
 (B) G₁
 (C) G₂
 (D) M
 (E) S
115. A 55-year-old man comes to the physician for a routine physical examination. He is currently taking no medications. His pulse is 80/min, and blood pressure is 165/95 mm Hg. Physical examination shows no other abnormalities. The presence of which of the following mechanisms is most likely to increase this patient's blood pressure further?
- (A) Decreased cardiac output
 (B) Decreased pulse
 (C) Decreased stroke volume
 (D) Increased peripheral vascular resistance
 (E) Increased pulmonary artery pressure

116. A 53-year-old man comes to the physician because of a 6-month history of intermittent blood in his stool. He has had no pain with defecation. Physical examination shows a 1-cm, visible anal mass located below the dentate line. A biopsy of the mass is scheduled. If the mass is found to be malignant, it is most appropriate to evaluate which of the following lymph nodes for possible metastasis?
- (A) Internal iliac
 - (B) Popliteal
 - (C) Sacral
 - (D) Superficial inguinal
 - (E) Superior rectal
117. A 59-year-old man is brought to the emergency department because of a 4-day history of nausea, vomiting, and diarrhea. He also has been confused and agitated during this period. He has a history of mild hypertension. His current medication is a diuretic. His temperature is 37°C (98.6°F), pulse is 108/min, respirations are 26/min, and blood pressure is 70/47 mm Hg. Physical examination shows delayed capillary refill of the lips and nail beds and cool extremities. His oxyhemoglobin saturation in a central vein is 60% (N=70–75). These findings are most consistent with which of the following types of shock?
- (A) Cardiogenic
 - (B) Distributive
 - (C) Hypovolemic
 - (D) Obstructive
 - (E) Septic

ANSWER FORM FOR USMLE STEP 1 SAMPLE TEST QUESTIONS

Block 1 (Questions 1–40)

1.	—	11.	—	21.	—	31.	—
2.	—	12.	—	22.	—	32.	—
3.	—	13.	—	23.	—	33.	—
4.	—	14.	—	24.	—	34.	—
5.	—	15.	—	25.	—	35.	—
6.	—	16.	—	26.	—	36.	—
7.	—	17.	—	27.	—	37.	—
8.	—	18.	—	28.	—	38.	—
9.	—	19.	—	29.	—	39.	—
10.	—	20.	—	30.	—	40.	—

Block 2 (Questions 41–80)

41.	—	51.	—	61.	—	71.	—
42.	—	52.	—	62.	—	72.	—
43.	—	53.	—	63.	—	73.	—
44.	—	54.	—	64.	—	74.	—
45.	—	55.	—	65.	—	75.	—
46.	—	56.	—	66.	—	76.	—
47.	—	57.	—	67.	—	77.	—
48.	—	58.	—	68.	—	78.	—
49.	—	59.	—	69.	—	79.	—
50.	—	60.	—	70.	—	80.	—

Block 3 (Questions 81–117)

81.	—	91.	—	101.	—	111.	—
82.	—	92.	—	102.	—	112.	—
83.	—	93.	—	103.	—	113.	—
84.	—	94.	—	104.	—	114.	—
85.	—	95.	—	105.	—	115.	—
86.	—	96.	—	106.	—	116.	—
87.	—	97.	—	107.	—	117.	—
88.	—	98.	—	108.	—		
89.	—	99.	—	109.	—		
90.	—	100.	—	110.	—		

ANSWER KEY FOR USMLE STEP 1 SAMPLE TEST QUESTIONS

Block 1 (Questions 1–40)

1. D	11. D	21. B	31. A
2. A	12. E	22. E	32. E
3. D	13. C	23. A	33. E
4. A	14. D	24. A	34. E
5. E	15. C	25. A	35. D
6. C	16. A	26. B	36. D
7. C	17. D	27. C	37. C
8. B	18. B	28. C	38. C
9. C	19. B	29. B	39. A
10. F	20. B	30. C	40. B

Block 2 (Questions 41–80)

41. C	51. C	61. A	71. B
42. E	52. G	62. A	72. C
43. D	53. C	63. C	73. A
44. A	54. B	64. C	74. A
45. B	55. D	65. B	75. A
46. A	56. E	66. A	76. A
47. C	57. E	67. B	77. D
48. E	58. D	68. E	78. B
49. D	59. E	69. E	79. E
50. D	60. A	70. A	80. E

Block 3 (Questions 81–117)

81. A	91. C	101. B	111. A
82. E	92. C	102. C	112. D
83. E	93. B	103. D	113. C
84. E	94. A	104. C	114. B
85. E	95. F	105. B	115. D
86. A	96. D	106. E	116. D
87. B	97. D	107. E	117. C
88. B	98. E	108. B	
89. C	99. B	109. B	
90. E	100. B	110. A	

Exhibit H



SAMPLE TEST QUESTIONS

Step 2 Clinical Knowledge (CK)



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Answer Key for USMLE Step 2 CK Sample Test Questions..... 47

USMLE STEP 2 CK TEST QUESTION FORMATS

Single-Item Questions

This is the traditional, most frequently used multiple-choice format. It consists of a vignette and question followed by three to 26 options that are in alphabetical or logical order. The response options in this format are lettered (e.g., A, B, C, D, E). You are required to select the one best answer to the question. Other options may be partially correct, but there is only ONE BEST answer.

Strategies for Answering Single One-Best-Answer Questions:

- Read each question carefully. It is important to understand what is being asked.
- Try to generate an answer and then look for it in the response option list.
- Alternatively, read each response option carefully, eliminating those that are clearly incorrect.
- Of the remaining response options, select the one that is most correct.
- If unsure about an answer, it is better to guess since unanswered questions are automatically counted as wrong answers.

Example Item: Single Question

A 32-year-old woman with type 1 diabetes mellitus has had progressive renal failure over the past 2 years. She has not yet started dialysis. Examination shows no abnormalities. Her hemoglobin concentration is 9 g/dL, hematocrit is 28%, and mean corpuscular volume is 94 μm^3 . A blood smear shows normochromic, normocytic cells. Which of the following is the most likely cause?

- | | |
|-----------------------------------|--------------------------------|
| (A) Acute blood loss | (F) Microangiopathic hemolysis |
| (B) Chronic lymphocytic leukemia | (G) Polycythemia vera |
| (C) Erythrocyte enzyme deficiency | (H) Sickle cell disease |
| (D) Erythropoietin deficiency | (I) Sideroblastic anemia |
| (E) Immuno-hemolysis | (J) β -Thalassemia trait |

(Answer: D)

Sequential Item Sets

A single patient-centered vignette may be associated with two or three consecutive questions about the information presented. Each question is associated with the initial patient vignette but is testing a different point. You are required to select the ONE BEST answer to each question. These questions are designed to be answered in sequential order. You must click "Proceed to Next Item" to view the next item in the set; once you click on this button, the next question will be displayed, and you will not be able to change the answer to the previous question.

Example Items: Sequential Questions

A 35-year-old woman is brought to the emergency department because of worsening pain and swelling of her right knee for the past 2 days. She has been taking acetaminophen for the knee pain during the past 2 days, but the pain is worse today. She has not had any trauma to the knee or any previous problems with her joints. She is otherwise healthy and she currently takes an oral contraceptive. She is sexually active and has a 10-year-old son who lives with her. She is a receptionist at a local hotel and she tells you she must stand often while working. She is 160 cm (5 ft 3 in) tall and weighs 52 kg (115 lb); BMI is 20 kg/m². Temperature is 37.9°C (98.9°F). The right knee is erythematous, swollen, and tender; there is pain on movement. No other joints are affected. X-ray of the knee shows an effusion but no structural abnormalities of the joint.

Which of the following is the most appropriate next step in diagnosis?

- (A) Arthrocentesis of the knee
- (B) Blood cultures
- (C) Complete blood count
- (D) MRI of the knee
- (E) Urine cultures

(Answer: A)

Arthrocentesis is done. The synovial fluid is cloudy. Gram stain is negative. Analysis of the synovial fluid shows a leukocyte count of 120,000/mm³ and 90% neutrophils. Which of the following is the most appropriate additional test on the synovial fluid?

- (A) Culture for bacteria
- (B) Glucose measurement
- (C) Polarized light microscopy
- (D) Protein level

(Answer: A)

Abstract Set Format

The abstract item format includes a summary of an experiment or clinical investigation presented in a manner commonly encountered by a physician, eg, as an abstract that accompanies a research report in a medical journal. Examinees must interpret the abstract in order to answer questions on various topics, including

- Decisions about care of an individual patient
- Biostatistics/epidemiology
- Pharmacology/therapeutics
- Use of diagnostic studies

NOTE: When additional question formats are added to the examination, notice will be provided on the USMLE website (www.usmle.org). You must monitor the website to stay informed about the types of questions that occur in the examination, and you must practice with the downloadable sample test questions available on the USMLE website in order to be fully prepared for the examination.

INTRODUCTION TO USMLE STEP 2 CK SAMPLE TEST QUESTIONS

The following pages include 120 sample test questions. Most of these practice questions are the same as those on the USMLE website.

ONLINE:

Please note that reviewing the sample questions as they appear on pages 8–45 is **not a substitute for practicing on the website**.

1. You should run the Step 2 CK examination tutorial and practice test questions that are provided on the USMLE website well before your test date.
2. The sample materials available on the USMLE website include additional questions and formats that do not appear in this booklet, such as an abstract question set, items with associated audio or video findings, and a sequential set of questions.

CONTENT:

You should become familiar with all test question formats that will be used in the actual examination.

Although the sample questions exemplify content on the examination, they may not reflect the content coverage on individual examinations.

In the actual examination, questions will be presented in random order. The questions will be presented one at a time in a format designed for easy on-screen reading, including a Normal Laboratory Values button (Table included here on pages 6–7). Photographs, charts, and x-rays in this booklet are not of the same quality as the pictorials used in the actual examination. In addition, you will be able to adjust the brightness and contrast of the computer screen.

TIMING:

To take the following sample test questions as they would be timed in the actual examination, you should allow a maximum of one hour for each block, for a total of three hours. Please be aware that most examinees perceive the time pressure to be greater during an actual examination.

An answer sheet for recording answers for this practice is provided on page 46. An answer key is provided on page 47. In the actual examination, answers will be selected on the screen; no answer form will be provided.

LABORATORY VALUES

* Included in the Biochemical Profile (SMA-12)

	<u>REFERENCE RANGE</u>	<u>SI REFERENCE INTERVALS</u>
BLOOD, PLASMA, SERUM		
* Alanine aminotransferase (ALT), serum.....	8-20 U/L	8-20 U/L
Amylase, serum	25-125 U/L	25-125 U/L
* Aspartate aminotransferase (AST), serum	8-20 U/L	8-20 U/L
Bilirubin, serum (adult) Total // Direct	0.1-1.0 mg/dL // 0.0-0.3 mg/dL	2-17 µmol/L // 0-5 µmol/L
* Calcium, serum (Ca ²⁺)	8.4-10.2 mg/dL	2.1-2.8 mmol/L
* Cholesterol, serum	Rec:<200 mg/dL	<5.2 mmol/L
Cortisol, serum.....	0800 h: 5-23 µg/dL // 1600 h: 3-15 µg/dL	138-635 nmol/L // 82-413 nmol/L
	2000 h: < 50% of 0800 h.....	Fraction of 0800 h: ≤ 0.50
Creatine kinase, serum	Male: 25-90 U/L	25-90 U/L
	Female: 10-70 U/L	10-70 U/L
* Creatinine, serum	0.6-1.2 mg/dL	53-106 µmol/L
Electrolytes, serum		
Sodium (Na ⁺)	136-145 mEq/L	136-145 mmol/L
* Potassium (K ⁺)	3.5-5.0 mEq/L	3.5-5.0 mmol/L
Chloride (Cl ⁻)	95-105 mEq/L	95-105 mmol/L
Bicarbonate (HCO ₃ ⁻)	22-28 mEq/L	22-28 mmol/L
Magnesium (Mg ²⁺)	1.5-2.0 mEq/L	0.75-1.0 mmol/L
Estradiol, total, serum (in pregnancy)		
24-28 wks // 32-36 wks	30-170 ng/mL // 60-280 ng/mL	104-590 nmol/L // 208-970 nmol/L
28-32 wks // 36-40 wks	40-220 ng/mL // 80-350 ng/mL	140-760 nmol/L // 280-1210 nmol/L
Ferritin, serum.....	Male: 15-200 ng/mL	15-200 µg/L
	Female: 12-150 ng/mL	12-150 µg/L
Follicle-stimulating hormone, serum/plasma	Male: 4-25 mIU/mL	4-25 U/L
	Female: premenopause 4-30 mIU/mL	4-30 U/L
	midcycle peak 10-90 mIU/mL	10-90 U/L
	postmenopause 40-250 mIU/mL	40-250 U/L
Gases, arterial blood (room air)		
pH	7.35-7.45	[H ⁺] 36-44 nmol/L
PCO ₂	33-45 mm Hg	4.4-5.9 kPa
PO ₂	75-105 mm Hg	10.0-14.0 kPa
* Glucose, serum.....	Fasting: 70-110 mg/dL	3.8-6.1 mmol/L
	2-h postprandial: < 120 mg/dL	< 6.6 mmol/L
Growth hormone - arginine stimulation	Fasting: < 5 ng/mL	< 5 µg/L
	provocative stimuli: > 7 ng/mL	> 7 µg/L
Immunoglobulins, serum		
IgA	76-390 mg/dL	0.76-3.90 g/L
IgE	0-380 IU/mL	0-380 kIU/L
IgG	650-1500 mg/dL	6.5-15 g/L
IgM	40-345 mg/dL	0.4-3.45 g/L
Iron	50-170 µg/dL	9-30 µmol/L
Lactate dehydrogenase, serum	45-90 U/L	45-90 U/L
Luteinizing hormone, serum/plasma	Male: 6-23 mIU/mL	6-23 U/L
	Female: follicular phase 5-30 mIU/mL	5-30 U/L
	midcycle 75-150 mIU/mL	75-150 U/L
	postmenopause 30-200 mIU/mL	30-200 U/L
Osmolality, serum	275-295 mOsmol/kg H ₂ O	275-295 mOsmol/kg H ₂ O
Parathyroid hormone, serum, N-terminal	230-630 pg/mL	230-630 ng/L
* Phosphatase (alkaline), serum (p-NPP at 30°C)	20-70 U/L	20-70 U/L
* Phosphorus (inorganic), serum	3.0-4.5 mg/dL	1.0-1.5 mmol/L
Prolactin, serum (hPRL)	< 20 ng/mL	< 20 µg/L
* Proteins, serum		
Total (recumbent)	6.0-7.8 g/dL	60-78 g/L
Albumin	3.5-5.5 g/dL	35-55 g/L
Globulin	2.3-3.5 g/dL	23-35 g/L
Thyroid-stimulating hormone, serum or plasma	0.5-5.0 µU/mL	0.5-5.0 mU/L
Thyroidal iodine (¹²³ I) uptake.....	8%-30% of administered dose/24 h	0.08-0.30/24 h
Thyroxine (T ₄), serum.....	5-12 µg/dL	64-155 nmol/L
Triglycerides, serum	35-160 mg/dL	0.4-1.81 mmol/L
Triiodothyronine (T ₃), serum (RIA)	115-190 ng/dL	1.8-2.9 nmol/L
Triiodothyronine (T ₃) resin uptake.....	25%-35%	0.25-0.35
* Urea nitrogen, serum	7-18 mg/dL	1.2-3.0 mmol/L
* Uric acid, serum	3.0-8.2 mg/dL	0.18-0.48 mmol/L

LABORATORY VALUES (continued from previous page)

	<u>REFERENCE RANGE</u>	<u>SI REFERENCE INTERVALS</u>
BODY MASS INDEX (BMI)		
Body mass index	Adult: 19-25 kg/m ²	
CEREBROSPINAL FLUID		
Cell count	0-5/mm ³	0-5 x 10 ⁶ /L
Chloride	118-132 mEq/L	118-132 mmol/L
Gamma globulin	3%-12% total proteins	0.03-0.12
Glucose	40-70 mg/dL	2.2-3.9 mmol/L
Pressure	70-180 mm H ₂ O	70-180 mm H ₂ O
Proteins, total	<40 mg/dL	<0.40 g/L
HEMATOLOGIC		
Bleeding time (template)	2-7 minutes	2-7 minutes
Erythrocyte count	Male: 4.3-5.9 million/mm ³ Female: 3.5-5.5 million/mm ³	4.3-5.9 x 10 ¹² /L 3.5-5.5 x 10 ¹² /L
Erythrocyte sedimentation rate (Westergren)	Male: 0-15 mm/h Female: 0-20 mm/h	0-15 mm/h 0-20 mm/h
Hematocrit	Male: 41%-53% Female: 36%-46%	0.41-0.53 0.36-0.46
Hemoglobin A _{1c}	≤ 6%	≤ 0.06
Hemoglobin, blood	Male: 13.5-17.5 g/dL Female: 12.0-16.0 g/dL	2.09-2.71 mmol/L 1.86-2.48 mmol/L
Hemoglobin, plasma	1-4 mg/dL	0.16-0.62 mmol/L
Leukocyte count and differential		
Leukocyte count	4500-11,000/mm ³	4.5-11.0 x 10 ⁹ /L
Segmented neutrophils	54%-62%	0.54-0.62
Bands	3%-5%	0.03-0.05
Eosinophils	1%-3%	0.01-0.03
Basophils	0%-0.75%	0-0.0075
Lymphocytes	25%-33%	0.25-0.33
Monocytes	3%-7%	0.03-0.07
Mean corpuscular hemoglobin	25.4-34.6 pg/cell	0.39-0.54 fmol/cell
Mean corpuscular hemoglobin concentration	31%-36% Hb/cell	4.81-5.58 mmol Hb/L
Mean corpuscular volume	80-100 μm ³	80-100 fL
Partial thromboplastin time (activated)	25-40 seconds	25-40 seconds
Platelet count	150,000-400,000/mm ³	150-400 x 10 ⁹ /L
Prothrombin time	11-15 seconds	11-15 seconds
Reticulocyte count	0.5%-1.5%	0.005-0.015
Thrombin time	<2 seconds deviation from control	<2 seconds deviation from control
Volume		
Plasma	Male: 25-43 mL/kg Female: 28-45 mL/kg	0.025-0.043 L/kg 0.028-0.045 L/kg
Red cell	Male: 20-36 mL/kg Female: 19-31 mL/kg	0.020-0.036 L/kg 0.019-0.031 L/kg
SWEAT		
Chloride	0-35 mmol/L	0-35 mmol/L
URINE		
Calcium	100-300 mg/24 h	2.5-7.5 mmol/24 h
Chloride	Varies with intake	Varies with intake
Creatinine clearance	Male: 97-137 mL/min Female: 88-128 mL/min	
Estriol, total (in pregnancy)		
30 wks	6-18 mg/24 h	21-62 μmol/24 h
35 wks	9-28 mg/24 h	31-97 μmol/24 h
40 wks	13-42 mg/24 h	45-146 μmol/24 h
17-Hydroxycorticosteroids	Male: 3.0-10.0 mg/24 h Female: 2.0-8.0 mg/24 h	8.2-27.6 μmol/24 h 5.5-22.0 μmol/24 h
17-Ketosteroids, total	Male: 8-20 mg/24 h Female: 6-15 mg/24 h	28-70 μmol/24 h 21-52 μmol/24 h
Osmolality	50-1400 mOsmol/kg H ₂ O	
Oxalate	8-40 μg/mL	90-445 μmol/L
Potassium	Varies with diet	Varies with diet
Proteins, total	<150 mg/24 h	<0.15 g/24 h
Sodium	Varies with diet	Varies with diet
Uric acid	Varies with diet	Varies with diet

Sample Questions**Block 1 (Questions 1-40)**

1. A 16-year-old girl is brought to the physician because of intermittent pain and swelling of both ankles over the past month. She is currently not in pain. When the pain occurs, it is so severe that she is unable to walk. There is no associated fever or chills. She is sexually active and has had one sexual partner for 12 months. Her temperature is 37°C (98.6°F), pulse is 80/min, and blood pressure is 145/87 mm Hg. Examination shows no abnormalities or tenderness of the ankle joints. There is a nonpainful ulcer on the oral buccal mucosa. The lungs are clear to auscultation. Cardiac examination shows no abnormalities. Laboratory studies show:

Leukocyte count	4000/mm ³
Segmented neutrophils	65%
Eosinophils	3%
Lymphocytes	25%
Monocytes	7%
Platelet count	60,000/mm ³
Erythrocyte sedimentation rate	100 mm/h
Serum	
Antinuclear antibodies	1:320
Anti-DNA antibodies	positive
Rapid plasma reagin	1:16
Rheumatoid factor	negative
Urine	
Protein	3+
RBC casts	negative
RBC	none
WBC	10–20/hpf

X-rays of the ankles show no abnormalities other than tissue swelling. Which of the following is the most likely diagnosis?

- (A) Disseminated gonococcal disease
 - (B) Polyarticular arthritis
 - (C) Reactive arthritis
 - (D) Secondary syphilis
 - (E) Systemic lupus erythematosus
2. A 67-year-old woman comes to the physician for a follow-up examination. She had a pulmonary embolism and required treatment in the hospital for 3 weeks. She had a retroperitoneal hemorrhage; anticoagulant therapy was temporarily discontinued, and she underwent placement of an inferior vena cava (IVC) filter. She had a hematoma that was resolving on discharge from the hospital 2 weeks ago. Today, she says she has had a persistent sensation of tingling and numbness of her left thigh that she did not report in the hospital because she thought it would go away; the sensation has improved somewhat during the past week. Her only medication is warfarin. Vital signs are within normal limits. Examination of the skin shows no abnormalities. Muscle strength is normal. Sensation to light touch is decreased over a 5 x 5-cm area on the lateral aspect of the left anterior thigh. Which of the following is the most likely cause of this patient's decreased sensation?
- (A) Cerebral infarction during the hospitalization
 - (B) Complication of the IVC filter placement
 - (C) Compression of the lateral femoral cutaneous nerve
 - (D) Hematoma of the left thigh
 - (E) Spinal cord infarct
 - (F) Vitamin B₁₂ (cobalamin) deficiency

3. A 5-year-old boy is brought to the physician because of a 2-day history of fever and painful swelling of the left ankle. He has had recurrent cervical lymphadenitis and pneumonia since infancy. Two years ago, a culture from an abscess in the cervical region grew *Staphylococcus aureus*. His temperature is 38°C (100.4°F). Examination shows a tender, erythematous, edematous left ankle; there is point tenderness over the medial malleolus. A bone scan shows increased uptake in the left lower tibial metaphysis. Culture of bone aspirate grows *Serratia marcescens*. Nitroblue tetrazolium test shows no color change. Which of the following is the most likely mechanism for these findings?
- (A) Adenosine deaminase deficiency
 - (B) Consumption of complement
 - (C) Defective opsonization
 - (D) Destruction of CD4+ T lymphocytes
 - (E) Developmental arrest of maturation of B lymphocytes
 - (F) Dysmorphogenesis of the third and fourth pharyngeal pouches
 - (G) Impaired chemotaxis
 - (H) Impaired phagocytic oxidative metabolism
4. A 42-year-old woman is brought to the emergency department 10 minutes after being involved in a high-speed motor vehicle collision in which she was a restrained passenger. On arrival, she has shortness of breath and abdominal pain. Her pulse is 135/min, respirations are 30/min, and blood pressure is 80/40 mm Hg. Breath sounds are decreased at the left lung base. An x-ray of the chest shows opacification of the left lower lung field with loss of the diaphragmatic shadow. Placement of a chest tube yields a small amount of air followed by greenish fluid. Which of the following is the most appropriate next step in management?
- (A) CT scan of the abdomen
 - (B) CT scan of the chest
 - (C) Thoracoscopy
 - (D) Laparotomy
 - (E) Thoracotomy
5. A 42-year-old woman comes to the physician for an annual pelvic examination and Pap smear. Over the past year, she has had increasing fatigue and difficulty sleeping. She has two children who both attend college. She is currently looking for part-time work outside the home. Her husband has been busy in a new start-up business. Examination shows no abnormalities. Laboratory studies show:

Hemoglobin	15 g/dL
Mean corpuscular volume	95 μm^3
Leukocyte count	6000/mm ³ with a normal differential
Serum	
Na ⁺	145 mEq/L
Cl ⁻	102 mEq/L
K ⁺	4.5 mEq/L
HCO ₃ ⁻	25 mEq/L
Urea nitrogen	18 mg/dL
Creatinine	1.0 mg/dL
Alkaline phosphatase	70 U/L
Aspartate aminotransferase (AST, GOT)	22 U/L
Alanine aminotransferase (ALT, GPT)	19 U/L
γ -Glutamyltransferase (GGT)	83 U/L (N=5–50 U/L)

Which of the following is the most likely explanation for this patient's laboratory abnormalities?

- (A) Acetaminophen
- (B) Alcohol
- (C) Diphenhydramine
- (D) Estrogen effect
- (E) Ibuprofen



6. A 37-year-old woman comes to the emergency department because of a 3-day history of increasingly severe abdominal pain, nausea, and vomiting. Twelve years ago, she had a hysterectomy because of severe dysfunctional uterine bleeding. Her temperature is 37°C (98.6°F), blood pressure is 106/70 mm Hg, pulse is 110/min, and respirations are 12/min. Examination shows a distended, tympanic abdomen with diffuse tenderness but no guarding; bowel sounds are hypoactive. Her leukocyte count is 10,000/mm³, and hematocrit is 44%. An x-ray of the abdomen is shown. Which of the following is the most appropriate initial step in management?
- (A) CT scan of the abdomen
 - (B) Intravenous neostigmine therapy
 - (C) Esophagogastroduodenoscopy
 - (D) Nasogastric intubation
 - (E) Laparotomy
-
7. A 9-year-old boy is brought to the physician because of progressive weakness and a purple-red discoloration over his cheeks and upper eyelids over the past 8 weeks. His symptoms began shortly after a camping trip, and he now is unable to climb stairs, walk long distances, comb his hair, or dress himself. His mother says that she was careful to apply his sunscreen on the trip and can recall no tick bites or exposure to poisonous plants. His only medication is a topical corticosteroid for several dry, scaly patches of the skin. He appears weak and lethargic. He is at the 75th percentile for height and 25th percentile for weight; he has had no change in his weight since his last examination 9 months ago. His temperature is 37.7°C (99.8°F), blood pressure is 110/68 mm Hg, pulse is 105/min, and respirations are 28/min. Examination of the skin shows a purple-red discoloration over the cheeks and eyelids, periorbital edema, erythematous plaques and scales over the elbows and knees, and flat-topped red papules over all knuckles. There is generalized weakness and atrophy of the proximal muscles. Which of the following is the most likely diagnosis?
- (A) Dermatomyositis
 - (B) Duchenne's muscular dystrophy
 - (C) Eczema
 - (D) Lyme disease
 - (E) Psoriasis
 - (F) Rocky Mountain spotted fever
 - (G) Seborrhea
 - (H) Systemic lupus erythematosus

8. A 37-year-old man with type 1 diabetes mellitus is admitted to the hospital because of inadequate control of his glucose concentrations for the past 2 months. Despite his poor control, he demands that he be discharged. He reports that he has had a 3-month history of fatigue, irritability, and feelings of hopelessness. He says that he has been noncompliant with his diabetic regimen, adding, "Sometimes I forget." He has been avoiding his family and friends because he is not in the mood to see them but admits that he is lonely. He did not get out of bed for 2 days, which prompted his wife to call an ambulance and have him admitted to the hospital. Prior to admission to the hospital, his only medication was insulin, although he often missed doses. He does not drink alcohol. He is 168 cm (5 ft 6 in) tall and weighs 100 kg (220 lb); BMI is 36 kg/m². His temperature is 37°C (98.6°F), pulse is 68/min, respirations are 18/min, and blood pressure is 150/85 mm Hg. Physical examination shows no abnormalities. On mental status examination, he is tired and has a restricted affect. There is no evidence of suicidal ideation. Cognition is intact. His fasting serum glucose concentration is 120 mg/dL. Which of the following is the most appropriate next step in management?

- (A) Adhere to the patient's wishes and discuss home-care options
- (B) Adhere to the patient's wishes on the condition that he agree to home nursing care
- (C) Schedule neuropsychological testing
- (D) Seek a court order to appoint a legal guardian
- (E) Involuntarily hold the patient in the hospital

9. A 2-month-old boy is brought to the physician because of a 6-week history of persistent diarrhea and vomiting, most pronounced after formula feedings. He has had a 113-g (4-oz) weight loss since birth. He currently weighs 3100 g (6 lb 13 oz) and is 51 cm (20 in) in length. He appears irritable. Examination shows jaundice. The lungs are clear to auscultation. No murmurs are heard. The liver is palpated 2 to 3 cm below the right costal margin, and the spleen is palpated 1 to 2 cm below the left costal margin. Laboratory studies show:

Serum	
Glucose	35 mg/dL
Bilirubin (total)	2.3 mg/dL
Urine	
Glucose	negative
Reducing substances	3+

Which of the following is the most likely mechanism of these findings?

- (A) Decreased gluconeogenesis
 - (B) Decreased insulin secretion
 - (C) Increased glucagon secretion
 - (D) Increased gluconeogenesis
 - (E) Increased insulin secretion
 - (F) Insulin resistance
10. A previously healthy 22-year-old college student is brought to the emergency department by her parents 20 minutes after they observed her having a seizure. After the seizure, she was confused and had difficulty thinking of some words. She has had a headache, cough, and fever for 3 days treated with acetaminophen and dextromethorphan. Her temperature is 38.9°C (102°F). Neurologic examination shows diffuse hyperreflexia. On mental status examination, she is confused and has short-term memory deficits. She has difficulty naming objects and makes literal paraphasic errors. An MRI of the brain shows bitemporal hyperintensities. A lumbar puncture is done; cerebrospinal fluid analysis shows an erythrocyte count of 340/mm³, a leukocyte count of 121/mm³ (88% monocytes), and a protein concentration of 78 mg/dL. Which of the following is the most likely diagnosis?
- (A) Bacterial meningitis
 - (B) Dextromethorphan intoxication
 - (C) Herpes simplex encephalitis
 - (D) HIV encephalopathy
 - (E) Reye syndrome
 - (F) Syphilis

11. A 32-year-old woman comes to the physician because of fatigue for 6 months. She has had progressively severe dyspnea on exertion for 6 weeks. She had an extensive abdominal operation 5 years ago for Crohn disease. She does not take any medications. Her temperature is 37°C (98.6°F), pulse is 62/min, respirations are 18/min, and blood pressure is 110/65 mm Hg. Examination of the thyroid gland, lungs, heart, abdomen, and extremities shows no abnormalities. Test of the stool for occult blood is negative. Laboratory studies show:

Hemoglobin	8 g/dL
Mean corpuscular volume	70 μm^3
Leukocyte count	9000/mm ³
Platelet count	500,000/mm ³

Which of the following is the most likely diagnosis?

- (A) Acute leukemia
 - (B) Anemia of chronic disease
 - (C) Folic acid deficiency
 - (D) Iron deficiency
 - (E) Lyme disease
 - (F) Microangiopathic hemolytic anemia
 - (G) Pernicious anemia
 - (H) Sleep apnea
12. A previously healthy 37-year-old woman comes to the physician because of a 3-month history of episodes of severe anxiety, shortness of breath, palpitations, and numbness in her hands and feet. Her vital signs are within normal limits. Physical examination shows no abnormalities. Thyroid function studies and an ECG show no abnormalities. Which of the following is the most appropriate pharmacotherapy?
- (A) Lithium carbonate
 - (B) Methylphenidate
 - (C) Olanzapine
 - (D) Paroxetine
 - (E) Valproic acid
13. A 19-year-old college student comes to the physician because of progressive hair growth over her face and body since the age of 16 years. She also has acne and oily skin. Menses have occurred at 30- to 90-day intervals since menarche at the age of 14 years. She has no history of serious illness and takes no medications. She is 168 cm (5 ft 6 in) tall and weighs 88 kg (193 lb); BMI is 31 kg/m². Her temperature is 37.2°C (99°F), pulse is 72/min, respirations are 16/min, and blood pressure is 120/80 mm Hg. Physical examination shows coarse, pigmented hair over the chin and upper lip, around both nipples, and along the midline of the lower abdomen. The remainder of the examination, including pelvic examination, shows no abnormalities. Serum studies show:

Fasting glucose	95 mg/dL
Fasting insulin	7.5 $\mu\text{U/mL}$ (N=11–240)
Dehydroepiandrosterone sulfate	3 $\mu\text{g/mL}$ (N=0.5–5.4)
Follicle-stimulating hormone	8 mIU/mL
17 α -Hydroxyprogesterone	160 ng/dL (N=20–300)
Luteinizing hormone	10 mIU/mL
Testosterone	4.2 nmol/L (N<3.5)

Which of the following is the most appropriate pharmacotherapy?

- (A) Bromocriptine
- (B) Clomiphene
- (C) Combination oral contraceptive
- (D) Dexamethasone
- (E) Gonadotropin-releasing hormone agonist

14. A 72-year-old woman with unresectable small cell carcinoma of the lung is brought to the emergency department after her family found her unresponsive. During the past week, she has become progressively confused. On arrival, she does not respond to command but withdraws all extremities to pain. Her temperature is 37°C (98.6°F), pulse is 80/min, respirations are 12/min, and blood pressure is 130/70 mm Hg. The pupils are equal and reactive to light, and corneal reflexes are brisk; there is spontaneous medial and lateral gaze. Laboratory studies show:

Hemoglobin	12.2 g/dL
Leukocyte count	6000/mm ³
Serum	
Na ⁺	118 mEq/L
Cl ⁻	98 mEq/L
K ⁺	4.5 mEq/L
HCO ₃ ⁻	26 mEq/L
Urea nitrogen	16 mg/dL
Glucose	95 mg/dL
Creatinine	0.8 mg/dL

Which of the following is the most likely mechanism of these findings?

- (A) Adrenal insufficiency
 (B) Inadequate renal blood flow
 (C) Injury to the renal tubules
 (D) Nonphysiologic ADH (vasopressin) secretion
 (E) Nonphysiologic aldosterone secretion
 (F) Physiologic ADH (vasopressin) secretion
 (G) Physiologic aldosterone secretion
15. During the past month, a 37-year-old woman has had epigastric pain 2 to 3 hours after eating and at night; she has a feeling of fullness and bloating even when she eats small amounts. For 2 days, she has been unable to keep any food "down" and has had repetitive vomiting between meals. Six months ago, she was diagnosed with a peptic ulcer and was treated with a proton pump inhibitor and antibiotics. After 2 weeks of treatment, her symptoms were alleviated, and she discontinued the medication due to the quantity of pills she had to take. Placement of a Foley catheter yields no urine. This patient is most likely to have which of the following electrolyte profiles?

	Na ⁺ (mEq/L)	K ⁺ (mEq/L)	Cl ⁻ (mEq/L)	HCO ₃ ⁻ (mEq/L)
(A)	130	2.8	88	32
(B)	130	4.2	100	24
(C)	130	4.4	100	14
(D)	148	2.3	96	24
(E)	148	4.8	110	24

16. A 36-year-old nulligravid woman with primary infertility comes for a follow-up examination. She has been unable to conceive for 10 years; analysis of her husband's semen during this period has shown normal sperm counts. Menses occur at regular 28-day intervals and last 5 to 6 days. She is asymptomatic except for severe dysmenorrhea. An endometrial biopsy specimen 5 days before menses shows secretory endometrium. Hysterosalpingography 1 year ago showed normal findings. Pelvic examination shows a normal vagina and cervix. Bimanual examination shows a normal-sized uterus and no palpable adnexal masses. Rectal examination is unremarkable. Which of the following is the most likely diagnosis?
- (A) Anovulation
 (B) Endometriosis
 (C) Intrauterine synechiae
 (D) Male factor
 (E) Tubal obstruction

17. A 37-year-old woman comes to the physician because of a 1-day history of throbbing facial pain. She describes the pain as 7 out of 10 in intensity. Over the past 9 days, she has had nasal congestion, purulent nasal discharge, sore throat, and a nonproductive cough. She does not smoke. Her husband and children have had no recent illness. Her temperature is 38.5°C (101.3°F). Examination shows congested nasal mucosa and purulent discharge on the left. There is tenderness to palpation over the left cheek and no transillumination over the left maxillary sinus. The tympanic membranes are normal, and there is no erythema of the throat. Examination shows no cervical adenopathy. The lungs are clear to auscultation. Which of the following is the most likely causal organism?

(A) *Haemophilus influenzae* type b
 (B) *Moraxella catarrhalis*
 (C) *Staphylococcus aureus*
 (D) *Streptococcus pneumoniae*
 (E) *Streptococcus pyogenes* (group A)

18. An 18-year-old man with a 12-year history of type 1 diabetes mellitus comes to the physician for a follow-up examination. Medications include 25 U of NPH insulin and 10 U of regular insulin in the morning and 10 U of NPH insulin and 10 U of regular insulin before dinner. His hemoglobin A_{1c} was 14.5% 12 weeks ago. His current pulse is 80/min, respirations are 20/min, and blood pressure is 145/95 mm Hg. Examination shows scattered retinal microaneurysms bilaterally. The remainder of the examination shows no other abnormalities. Laboratory studies show:

Hemoglobin A _{1c}	13%
Serum	
Na ⁺	130 mEq/L
K ⁺	3.2 mEq/L
Cl ⁻	101 mEq/L
HCO ₃ ⁻	23 mEq/L
Glucose	325 mg/dL
Creatinine	1.5 mg/dL
Cholesterol	350 mg/dL
Urine	
Blood	negative
Glucose	4+
Protein	1+
Ketones	Negative

Which of the following is the most likely renal diagnosis?

- (A) Cholesterol renal emboli
 (B) Diabetic nephropathy
 (C) Hypertensive glomerulosclerosis
 (D) Hypokalemic nephropathy
 (E) Sodium-losing nephropathy
19. A cohort study is conducted to compare the incidence of adverse effects of a recently approved antihypertensive pharmacotherapy with that of conventional therapy. A total of 20,000 patients are enrolled. Twelve thousand are prescribed the recently approved therapy, and 8,000 are prescribed conventional therapy. Patients in the study and control groups are matched for baseline blood pressure, age, and gender. Data are collected from the records of the patients' ongoing clinical care. Results show that those receiving the newly approved treatment have twice the incidence of fatigue compared with those receiving the conventional treatment. The results are statistically significant ($p=0.01$). Which of the following potential flaws is most likely to invalidate this study?
- (A) Publication bias
 (B) Selection bias
 (C) Type I error
 (D) Type II error



20. A 6-year-old girl is brought to the physician because of a 1-month history of a recurrent pruritic rash on her arms. She was born at term and has been healthy except for an episode of bronchiolitis 6 months ago treated with albuterol. A photograph of the rash is shown. Which of the following is the most appropriate next step in management?

- (A) Coal tar therapy
- (B) Oral antibiotic therapy
- (C) Topical antibiotic therapy
- (D) Topical corticosteroid therapy
- (E) Vitamin supplementation

21. A 17-year-old girl comes to the physician for an examination prior to entering college. She reports that she feels well but is nervous about leaving home for the first time. She states that she has tried to diet to improve her appearance but that food restriction often "backfires" because she becomes hungry and then engages in episodes of binge eating. She reports a loss of control during these episodes, saying "It's like I stop thinking at all and before I know it, I have eaten two pizzas." She induces vomiting several times during each binge and has developed a pattern of bingeing and purging every evening. She has no history of serious illness and takes no medications. She is 165 cm (5 ft 5 in) tall and weighs 57 kg (125 lb); BMI is 21 kg/m². Vital signs are within normal limits. Physical examination shows dry mucous membranes, erosion of enamel on the lingual surface of the front teeth, and hypertrophy of the parotid gland. Serum studies are most likely to show which of the following sets of findings in this patient?

	Potassium	Bicarbonate
(A)	Decreased	decreased
(B)	Decreased	increased
(C)	Increased	decreased
(D)	Increased	increased
(E)	Normal	decreased
(F)	Normal	increased

22. A previously healthy 27-year-old nulligravid woman comes to the emergency department because of a 2-day history of moderate-to-severe pain and swelling of the left labia. She is sexually active and uses condoms inconsistently. Her temperature is 37.2°C (99°F), pulse is 92/min, respirations are 18/min, and blood pressure is 115/75 mm Hg. Pelvic examination shows a 4 x 3-cm, tender, fluctuant mass medial to the left labium majus compromising the introital opening. Which of the following is the most appropriate next step in management?

- (A) Administration of intravenous metronidazole
- (B) Administration of intravenous penicillin G
- (C) Ultrasound-guided needle aspiration of the mass
- (D) Incision and drainage
- (E) Vulvectomy

23. A 30-year-old woman comes to the physician because of intermittent throbbing headaches, sweating, and pallor over the past 3 months. She has had several blood pressure measurements that fluctuate from 110/80 mm Hg to 160/108 mm Hg. Her pulse is 100/min, and blood pressure now is 138/88 mm Hg. Serum studies show:

Na ⁺	140 mEq/L
Cl ⁻	110 mEq/L
K ⁺	4.5 mEq/L
HCO ₃ ⁻	26 mEq/L
Urea nitrogen	14 mg/dL
Creatinine	1 mg/dL

Which of the following is the most likely location of the abnormality?

- (A) Adrenal cortex
 - (B) Adrenal medulla
 - (C) Aorta
 - (D) Renal arterioles
 - (E) Renal glomeruli
 - (F) Thyroid gland
24. A 4-year-old boy is brought to the physician because of temperatures to 39.4°C (102.9°F) for 8 days. Examination shows anterior cervical lymphadenopathy, nonexudative conjunctivitis bilaterally, a strawberry tongue, an erythematous truncal rash, and edema of the hands and feet. Which of the following is the most appropriate pharmacotherapy to prevent complications of this illness?
- (A) Intravenous immune globulin
 - (B) Intravenous penicillin
 - (C) Intravenous prednisone
 - (D) Oral isoniazid
 - (E) Oral rifampin
25. A 57-year-old woman is brought to the emergency department 45 minutes after she fell after an episode of light-headedness. She has a 6-month history of progressive fatigue, tingling sensations in her fingers and toes, and loss of balance. She underwent a partial gastrectomy for peptic ulcer disease 10 years ago. She has type 2 diabetes mellitus. She has smoked one pack of cigarettes daily for 40 years. Her only medication is insulin. She appears pale. Her temperature is 37°C (98.6°F), pulse is 105/min, respirations are 20/min, and blood pressure is 124/76 mm Hg. The abdomen is soft with a well-healed surgical scar. Sensation to vibration and position is absent over the upper and lower extremities. She has a broad-based gait. Laboratory studies show:

Hemoglobin	8.3 g/dL
Mean corpuscular volume	105 μm^3
Leukocyte count	4800/mm ³
Platelet count	100,000/mm ³
Serum	
Bilirubin, total	2.1 mg/dL
Direct	0.2 mg/dL
Lactate dehydrogenase	320 U/L

Which of the following is the most likely explanation for these findings?

- (A) Amyotrophic lateral sclerosis
- (B) Diabetes mellitus
- (C) History of gastrectomy
- (D) Meniere disease
- (E) Multiple sclerosis
- (F) Vertebrobasilar deficiency

26. A 67-year-old woman comes to the physician because of dizziness for 6 weeks. When she stands up suddenly, she becomes light-headed and has to steady herself for approximately 1 to 2 minutes before she is able to walk. She has hypertension and type 2 diabetes mellitus. Current medications include glyburide, a diuretic, a β -adrenergic blocking agent, and an angiotensin-converting enzyme (ACE) inhibitor. Her pulse is 55/min. Her blood pressure is 110/70 mm Hg in the right arm and 70/50 mm Hg in the left arm while supine; her blood pressure is 70/50 mm Hg in the right arm and 50/30 mm Hg in the left arm immediately after standing. Neurologic examination shows no focal findings. An ECG shows sinus bradycardia with no evidence of ischemia. Carotid duplex ultrasonography shows reverse flow in the left vertebral artery with no evidence of occlusion. Which of the following is the most appropriate next step in management?

- (A) Cardiac stress scintigraphy
- (B) Adjusting her medication regimen
- (C) Warfarin therapy
- (D) Transesophageal echocardiography
- (E) Coronary arteriography

27. Six hours after delivery, a 1200-g (2-lb 11-oz) newborn develops respiratory distress. She was born at 32 weeks' gestation. Her pulse is 136/min, respirations are 60/min, and blood pressure is 60/30 mm Hg. Examination shows grunting and moderate intercostal and subcostal retractions. The lungs are clear to auscultation. Umbilical artery blood gas analysis on 60% oxygen shows:

pH	7.32
PCO ₂	32 mm Hg
PO ₂	60 mm Hg

An x-ray of the chest shows diffuse reticulogranular densities with an air bronchogram. Which of the following is the most likely underlying mechanism?

- (A) Abnormality of mucociliary function
- (B) Aspiration of meconium into the lungs
- (C) Blockage of airways with mucus
- (D) Increased pulmonary capillary permeability
- (E) Infection with group B streptococcus
- (F) Pulmonary surfactant deficiency

28. A 70-year-old man comes to the physician because of fever, productive cough, and pleuritic chest pain for 1 day. Over the past 2 years, he has had two similar episodes. He also has had persistent pain in the thoracic spine for 1 month. His temperature is 39.2°C (102.6°F), pulse is 94/min, respirations are 22/min, and blood pressure is 110/60 mm Hg. There is dullness to percussion and decreased breath sounds over the right base. Examination shows tenderness of the midthoracic spine. Laboratory studies show:

Hematocrit	34%
Leukocyte count	15,000/mm ³
Segmented neutrophils	81%
Bands	4%
Lymphocytes	15%
Serum calcium	10.9 mg/dL

X-rays of the chest show consolidation of the right lower lobe, lytic lesions at T8 and T10, and diffuse osteopenia. Which of the following is the most likely diagnosis of this patient's back condition?

- (A) HIV infection
- (B) Multiple myeloma
- (C) Prostate cancer
- (D) Staphylococcal osteomyelitis
- (E) Tuberculosis osteomyelitis

29. A 47-year-old man is brought to the emergency department 2 hours after the sudden onset of shortness of breath, severe chest pain, and sweating. He has no history of similar symptoms. He has hypertension treated with hydrochlorothiazide. He has smoked one pack of cigarettes daily for 30 years. His pulse is 110/min, respirations are 24/min, and blood pressure is 110/50 mm Hg. A grade 3/6, diastolic blowing murmur is heard over the left sternal border and radiates to the right sternal border. Femoral pulses are decreased bilaterally. An ECG shows left ventricular hypertrophy. Which of the following is the most likely diagnosis?

- (A) Acute myocardial infarction
- (B) Aortic dissection
- (C) Esophageal rupture
- (D) Mitral valve prolapse
- (E) Pulmonary embolism

30. A previously healthy 34-year-old woman is brought to the physician because of fever and headache for 1 week. She has not been exposed to any disease. She takes no medications. Her temperature is 39.3°C (102.8°F), pulse is 104/min, respirations are 24/min, and blood pressure is 135/88 mm Hg. She is confused and oriented only to person. Examination shows jaundice of the skin and conjunctivae. There are a few scattered petechiae over the trunk and back. There is no lymphadenopathy. Physical and neurologic examinations show no other abnormalities. Test of the stool for occult blood is positive. Laboratory studies show:

Hematocrit	32% with fragmented and nucleated erythrocytes
Leukocyte count	12,500/mm ³
Platelet count	20,000/mm ³
Prothrombin time	10 sec
Partial thromboplastin time	30 sec
Fibrin split products	negative
Serum	
Urea nitrogen	35 mg/dL
Creatinine	3.0 mg/dL
Bilirubin	
Total	3.0 mg/dL
Direct	0.5 mg/dL
Lactate dehydrogenase	1000 U/L

Blood and urine cultures are negative. A CT scan of the head shows no abnormalities. Which of the following is the most likely diagnosis?

- (A) Disseminated intravascular coagulation
 - (B) Immune thrombocytopenic purpura
 - (C) Meningococcal meningitis
 - (D) Sarcoidosis
 - (E) Systemic lupus erythematosus
 - (F) Thrombotic thrombocytopenic purpura
31. A 67-year-old woman comes to the physician for her first influenza virus vaccination. She has a history of untreated hypertension. Her blood pressure is 160/100 mm Hg, and pulse is 100/min. Shortly after administration of the influenza virus vaccine, she develops shortness of breath, hives, and angioedema. Which of the following is most likely to have prevented this reaction?

- (A) Inquiry about an egg allergy
- (B) Heterophile agglutination test
- (C) Skin test with histamine reagent
- (D) β -Adrenergic blocking agent therapy
- (E) Amantadine therapy
- (F) Insulin therapy
- (G) Rimantadine therapy

32. A previously healthy 42-year-old man is brought to the emergency department 1 day after the sudden onset of shortness of breath and chest pain at rest; the pain is exacerbated by deep inspiration. His pulse is 100/min, respirations are 22/min, and blood pressure is 140/90 mm Hg. Breath sounds are normal. The remainder of the examination shows no abnormalities. Arterial blood gas analysis on room air shows:

pH	7.49
PCO ₂	30 mm Hg
PO ₂	64 mm Hg
O ₂ saturation	91%

An x-ray of the chest shows no abnormalities. Which of the following is the most likely mechanism of these findings?

- (A) Carbon monoxide poisoning
 (B) Congenital heart disease
 (C) Depressed alveolar ventilation
 (D) Interstitial edema
 (E) Interstitial fibrosis
 (F) Low oxygen-carrying capacity of the blood
 (G) Ventilation-perfusion mismatch
33. A 57-year-old woman comes to the physician because of an 8-week history of difficulty sleeping, fatigue, and muscle tension. During this period, she also has had memory lapses, difficulty concentrating, and has been reprimanded at work for arriving late. Over the past 2 weeks, she has had three episodes of palpitations and shortness of breath that have awakened her from sleep. Her pulse is 80/min, and blood pressure is 110/90 mm Hg. Physical examination shows no abnormalities. Mental status examination shows a depressed mood and constricted affect. She says that she is no longer interested in activities that she used to enjoy. She has suicidal ideation without a plan. Her hemoglobin concentration is 11 g/dL, and serum ferritin concentration is 140 ng/mL. Which of the following is the most appropriate initial step in treatment?
- (A) Acupuncture
 (B) Diazepam therapy
 (C) Donepezil therapy
 (D) Ferrous sulfate therapy
 (E) Ginkgo biloba extract therapy
 (F) Paroxetine therapy
34. Two days after admission to the hospital for congestive heart failure, an 82-year-old man is unable to walk because of severe, throbbing pain in his left foot. He has no history of similar episodes or recent trauma. He also has coronary artery disease and hypertension. Current medications include atenolol, lisinopril, furosemide, and aspirin. He does not smoke or drink alcohol. He is in moderate distress. His temperature is 38°C (100.4°F), pulse is 68/min and regular, respirations are 12/min, and blood pressure is 138/88 mm Hg. Jugular venous pulsations are present 3 cm above the sternal angle. Crackles are heard at both lung bases. A grade 2/6 systolic murmur is heard best at the left sternal border and second intercostal space. Examination of the lower extremities shows pitting pedal edema. There is tenderness, erythema, and edema of the left great toe. Active and passive range of motion of the first metacarpophalangeal joint produces pain; arthrocentesis of the joint is performed. Analysis of joint fluid aspirate is most likely to show which of the following?

	WBC (/mm ³)	Microscopic Examination for Crystals	Gram Stain
(A)	100	needle-shaped	no organisms
(B)	100	none	gram-positive cocci
(C)	100	none	no organisms
(D)	100	rhomboid	no organisms
(E)	20,000	needle-shaped	no organisms
(F)	20,000	none	gram-positive cocci

35. A 62-year-old man comes to the physician because of a 3-month history of progressive fatigue and joint pain, a 2-month history of sinus congestion, a 3-week history of cough, and a 1-week history of blood-tinged sputum. He has not had fever, nausea, vomiting, or diarrhea. He has hypercholesterolemia, stable angina pectoris, and hypertension. Medications include atorvastatin, labetalol, isosorbide, and aspirin. Over the past 3 weeks, he has been taking over-the-counter ibuprofen as needed for the joint pain. His pulse is 84/min, respirations are 12/min, and blood pressure is 132/76 mm Hg. Examination shows clear nasal discharge with no nasal or oral lesions. The joints are diffusely tender with no warmth or erythema; range of motion is full. Laboratory studies show:

Hematocrit	36%
Mean corpuscular volume	83 μm^3
Leukocyte count	14,000/mm ³
Segmented neutrophils	74%
Eosinophils	1%
Lymphocytes	14%
Monocytes	11%
Platelet count	275,000/mm ³
Serum	
Urea nitrogen	28 mg/dL
Creatinine	3.2 mg/dL
Antinuclear antibodies	1:256
Rheumatoid factor	negative
Antineutrophil cytoplasmic antibodies	positive
Urine	
Blood	3+
Protein	3+
RBC	15–17/hpf
WBC	1–2/hpf
RBC casts	rare

Which of the following is the most likely underlying mechanism of this patient's renal failure?

- (A) Atheroembolic disease
 - (B) Cold agglutinins
 - (C) Interstitial nephritis
 - (D) Lyme disease
 - (E) Septic arthritis
 - (F) Vasculitis
36. A 52-year-old woman comes to the emergency department because of a 1-week history of low-grade fever and increasing abdominal cramps that are exacerbated by bowel movements. She began a course of amoxicillin-clavulanate and metronidazole 2 days ago but has had no relief of her symptoms. She has had intermittent constipation for the past 12 years. She has not had nausea, vomiting, urinary symptoms, or bloody stools. She has a 3-year history of hypertension. She underwent total abdominal hysterectomy and bilateral salpingo-oophorectomy 5 years ago because of leiomyomata uteri. She is 165 cm (5 ft 5 in) tall and weighs 86 kg (190 lb); BMI is 32 kg/m². Her temperature is 38.1°C (100.6°F), pulse is 75/min, and blood pressure is 150/80 mm Hg. The lungs are clear to auscultation. Cardiac examination shows no abnormalities. The abdomen is soft, and there is tenderness to palpation of the left lower quadrant with guarding but no rebound. Bowel sounds are normal. The stool is brown, and test for occult blood is negative. Her hemoglobin concentration is 14.5 g/dL, leukocyte count is 15,000/mm³, and platelet count is 280,000/mm³; serum studies and urinalysis show no abnormalities. Which of the following is the most appropriate next step in diagnosis?
- (A) Examination of the stool for ova and parasites
 - (B) Test of the stool for *Clostridium difficile* toxin
 - (C) Endoscopic retrograde cholangiopancreatography
 - (D) Pelvic ultrasonography
 - (E) CT scan of the abdomen with contrast
 - (F) Colonoscopy

37. A 32-year-old man comes to the physician because he has had difficulty focusing on tasks at work and at home during the past 2 months. He works as an automobile mechanic. He has had a lot of energy for work but often is distracted to the point that he does not complete assigned tasks. He frequently stops working on his own tasks to attempt to develop greater efficiency in his shop. He states that he is delighted with his newfound energy and reports that he now needs only 4 hours of sleep nightly. He has no history of psychiatric illness. He always performed well in school. He has a history of drinking alcohol excessively and using methamphetamines and cocaine during his 20s, but he has not consumed alcohol or used illicit drugs for the past 3 years. His temperature is 37°C (98.6°F), pulse is 60/min, and blood pressure is 125/80 mm Hg. Physical examination shows no abnormalities. On mental status examination, he describes his mood as "good." He has a labile affect. His speech is rapid in rate but normal in rhythm, and his thought process is organized. Short- and long-term memory are intact. Attention and concentration are fair; he makes no errors when performing serial sevens, and he can repeat seven digits forward and five in reverse sequence. He has had no delusions or hallucinations. Which of the following is the most likely diagnosis?
- (A) Antisocial personality disorder
 - (B) Attention-deficit/hyperactivity disorder
 - (C) Bipolar disorder
 - (D) Borderline personality disorder
 - (E) Major depressive disorder
38. A 32-year-old woman, gravida 3, para 2, at 41 weeks' gestation is admitted to the hospital in active labor. Pregnancy has been complicated by mild asthma treated with inhaled bronchodilators. At the beginning of the second stage of labor, the cervix is 100% effaced and 10 cm dilated; the vertex is at -1 station. The fetal heart rate is reactive with no decelerations. After 10 minutes of pushing, there is a prolonged deceleration to 60/min. The patient has the acute onset of shortness of breath, rapidly develops cyanosis, and becomes unresponsive. Her pulse and blood pressure cannot be detected. Immediate resuscitation is started. Five minutes later, there is bleeding from the nose, mouth, and intravenous sites. Which of the following is the most likely diagnosis?
- (A) Amniotic fluid embolism
 - (B) Intracerebral hemorrhage
 - (C) Myocardial infarction
 - (D) Status asthmaticus
 - (E) Toxic shock syndrome
39. A 3-year-old girl is brought to the physician because of fever and left ear pain for 3 days. She has been treated with amoxicillin for the past 5 days for left otitis media. Her temperature is 38.5°C (101.3°F), pulse is 100/min, respirations are 20/min, and blood pressure is 80/60 mm Hg. Examination shows the left ear displaced forward and laterally from the head. There is edema and tenderness behind the left ear. Otoscopic examination shows a red, dull, left tympanic membrane that does not move. Which of the following is the most likely diagnosis?
- (A) Acoustic neuroma
 - (B) Labyrinthitis
 - (C) Lateral sinus thrombosis
 - (D) Mastoiditis
 - (E) Rhabdomyosarcoma
40. A 60-year-old man has had painful skin with exfoliation of the skin and mucous membranes for 1 day. He has been taking allopurinol and probenecid for 2 weeks because of gouty arthritis. There is diffuse exfoliation of the skin with oozing of serous fluid. The mucous membranes of the mouth are erythematous and exfoliated. There are no target lesions. Which of the following is the most likely diagnosis?
- (A) Bullous pemphigoid
 - (B) Erythema multiforme
 - (C) Pemphigus erythematosis
 - (D) Staphylococcal scalded-skin syndrome
 - (E) Toxic epidermal necrolysis

Sample Questions

Block 2 (Questions 41-80)

41. A hospitalized 57-year-old man has had severe progressive pain in his left knee since awakening 2 hours ago. He was admitted to the hospital 2 days ago for an acute myocardial infarction. Cardiac catheterization showed occlusion of the left anterior descending artery, and he underwent placement of a stent. Current medications include aspirin, metoprolol, lisinopril, simvastatin, clopidogrel, and heparin. Vital signs are within normal limits. Examination of the knee shows a large effusion. The knee is hot to touch and erythematous. He holds the knee in 30 degrees of flexion; the pain is exacerbated with further flexion or extension. Laboratory studies show:

Hematocrit	40%
Leukocyte count	13,000/mm ³
Serum	
Ca ²⁺	9.2 mg/dL
Urea nitrogen	15 mg/dL
Creatinine	1.0 mg/dL
Albumin	3.6 g/dL

An x-ray of the left knee shows calcification of the synovium. Which of the following is the most likely diagnosis?

- (A) Deep venous thrombosis
 - (B) Gonorrhea
 - (C) Gout
 - (D) Hemarthrosis
 - (E) Pseudogout
 - (F) Septic arthritis
42. A 47-year-old woman with end-stage renal disease comes to the physician because of increased shortness of breath since her last hemodialysis 2 days ago. Her pulse is 88/min and regular, respirations are 26/min and slightly labored, and blood pressure is 176/110 mm Hg. Examination shows jugular venous distention and pitting edema below the knees. Diffuse crackles are heard. Cardiac examination shows no murmurs, rubs, or gallops. Laboratory studies show:

Serum	
Na ⁺	138 mEq/L
Cl ⁻	100 mEq/L

Arterial blood gas analysis on room air:

pH	7.30
PCO ₂	28 mm Hg
PO ₂	88 mm Hg
HCO ₃ ⁻	14 mEq/L

Which of the following is the most likely acid-base status of this patient?

- (A) Metabolic acidosis, respiratory compensation
- (B) Metabolic acidosis, uncompensated
- (C) Metabolic alkalosis, respiratory compensation
- (D) Metabolic alkalosis, uncompensated
- (E) Respiratory acidosis, renal compensation
- (F) Respiratory acidosis, uncompensated
- (G) Respiratory alkalosis, renal compensation
- (H) Respiratory alkalosis, uncompensated
- (I) Normal acid-base balance

43. A 67-year-old man is brought to the emergency department because of a 1-week history of nausea, generalized weakness, and malaise. He has congestive heart failure, hypertension, and coronary artery disease. Current medications include lisinopril, digoxin, isosorbide, spironolactone, and metoprolol. His temperature is 37.2°C (99°F), pulse is 88/min, and blood pressure is 140/90 mm Hg. Examination shows a soft abdomen. There is 2+ edema in the lower extremities. Laboratory studies show:

Hematocrit	36%
Leukocyte count	10,000/mm ³
Serum	
Na ⁺	140 mEq/L
K ⁺	7.3 mEq/L
HCO ₃ ⁻	18 mEq/L
Urea nitrogen	40 mg/dL
Creatinine	1.8 mg/dL
AST	20 U/L

Urinalysis shows no abnormalities. Which of the following is the most likely explanation for this patient's hyperkalemia?

- (A) Adverse effect of medications
 - (B) Laboratory error
 - (C) Metabolic acidosis
 - (D) Renal failure
 - (E) Rhabdomyolysis
44. A 37-year-old woman with AIDS comes to the physician because of a 1-month history of progressive diarrhea and a 1.8-kg (4-lb) weight loss. During the past week, she has had six large watery stools daily. She is currently receiving triple antiretroviral therapy. She is employed as a flight attendant and works regularly on domestic flights throughout the USA. She also flies to Asia at least once monthly. She is 163 cm (5 ft 4 in) tall and weighs 59 kg (130 lb); BMI is 22 kg/m². Her temperature is 37°C (98.6°F), pulse is 88/min, and blood pressure is 112/64 mm Hg. The abdomen is scaphoid. The remainder of the examination shows no abnormalities. Her CD4+ T-lymphocyte count is 400/mm³ (Normal ≥500). Which of the following is the most likely causal organism?
- (A) *Cryptosporidium parvum*
 - (B) Cytomegalovirus
 - (C) *Mycobacterium avium-intracellulare* complex
 - (D) *Salmonella enteritidis*
 - (E) *Strongyloides stercoralis*
45. A previously healthy 19-year-old college student comes to student health services 24 hours after the onset of headache, stiff neck, and sensitivity to light. She does not recall any sick contacts. She had chickenpox at the age of 7 years. Her most recent examination 1 year ago included PPD skin testing and showed no abnormalities. She takes a daily multivitamin and an herbal weight-loss preparation. She received all appropriate immunizations during childhood but has not received any since then. She does not smoke, drink alcohol, or use illicit drugs. There is no family history of serious illness. She appears lethargic. Her temperature is 39.1°C (102.4°F), pulse is 112/min, respirations are 20/min, and blood pressure is 100/68 mm Hg. Examination shows diffuse petechiae. Kernig and Brudzinski signs are present. The remainder of the examination shows no abnormalities. A lumbar puncture is performed. Cerebrospinal fluid (CSF) analysis shows numerous segmented neutrophils and a decreased glucose concentration. A Gram stain of the CSF shows gram-negative cocci. Which of the following is the most appropriate pharmacotherapy?
- (A) Ceftriaxone
 - (B) Clindamycin
 - (C) Erythromycin
 - (D) Metronidazole
 - (E) Vancomycin

46. A 64-year-old woman comes to the physician because of a 5-month history of increasing shortness of breath, sore throat, and a cough productive of a small amount of white phlegm. Over the past week, she has had nausea related to excess coughing. Over the past year, she has had a 3.2-kg (7-lb) weight loss. She has asthma treated with theophylline and inhaled β -adrenergic agonists and corticosteroids. She has smoked one pack of cigarettes daily for 44 years and drinks one alcoholic beverage daily. She appears thin. Examination shows a 2-cm, nontender lymph node in the right supraclavicular area. Examination shows no other abnormalities. An x-ray of the chest shows a large right lower lobe density. A CT scan of the chest shows a 7.5 x 7.5 x 6-cm right lower lobe mass with some scattered calcifications. The lesion abuts the posterior chest wall without clear invasion. There are right lower peritracheal, precarinal, right hilar, and subcarinal lymph nodes. There is a 1.5-cm mass in the right adrenal gland. A biopsy specimen of the lung mass is most likely to show which of the following?
- (A) B-cell lymphoma
 - (B) Lung abscess
 - (C) Mesothelioma
 - (D) Metastatic adenocarcinoma of the breast
 - (E) Multiple endocrine neoplasia
 - (F) Non-small cell lung carcinoma
 - (G) Sarcoidosis
 - (H) Tuberculosis
47. A healthy 4-year-old girl is brought for a well-child examination. A grade 2/6 systolic ejection murmur is heard along the upper left sternal border. S₂ is widely split and does not vary with respiration. A soft mid-diastolic murmur is heard along the lower left sternal border. Examination shows no other abnormalities. Which of the following is the most likely diagnosis?
- (A) Aortic stenosis
 - (B) Atrial septal defect
 - (C) Coarctation of the aorta
 - (D) Mitral valve prolapse
 - (E) Patent ductus arteriosus
 - (F) Pulmonary stenosis
 - (G) Tetralogy of Fallot
 - (H) Transposition of the great arteries
 - (I) Ventricular septal defect
 - (J) Normal heart
48. A previously healthy 47-year-old man comes to the physician because of a 6.8-kg (15-lb) weight loss over the past 6 months. He spent 2 weeks in Mexico 3 months ago. Since returning, he has noticed that his stools have changed in size and consistency. He has not had fever, night sweats, or change in appetite. He takes no medications. He has smoked one pack of cigarettes daily for 20 years. He appears healthy and well nourished. His temperature is 37°C (98.6°F), pulse is 105/min, respirations are 16/min, and blood pressure is 130/78 mm Hg. Examination shows pale conjunctivae. The abdomen is soft with no organomegaly. Rectal examination shows a normal prostate with no masses. Test of the stool for occult blood is positive. Laboratory studies show:

Hemoglobin	11 g/dL
Mean corpuscular volume	72 μm^3
Platelet count	300,000/mm ³
Red cell distribution width	16% (N=13%–15%)

Which of the following is the most appropriate next step in diagnosis?

- (A) Second complete blood count in 3 months
- (B) CT scan of the abdomen
- (C) Colonoscopy
- (D) Esophagogastroduodenoscopy
- (E) Sigmoidoscopy



49. A 56-year-old man has had the painful weeping rash shown for 2 days. He underwent chemotherapy for non-Hodgkin lymphoma 1 year ago. His temperature is 36.7°C (98°F), pulse is 80/min, and blood pressure is 138/76 mm Hg. Examination shows no other abnormalities. Which of the following is the most likely diagnosis?
- (A) Herpes zoster
 - (B) Impetigo
 - (C) Pyoderma gangrenosum
 - (D) Syphilis
 - (E) Systemic lupus erythematosus
-
50. A 22-year-old man comes to the physician for a routine health maintenance examination. He feels well. He has had a painless left scrotal mass since childhood. Examination shows a 6-cm, soft, nontender left scrotal mass that transilluminates; there are no bowel sounds in the mass. Examination of the testis shows no abnormalities. Which of the following is the most likely cause of the mass?
- (A) Accumulation of scrotal adipose tissue
 - (B) Cryptorchidism of the left testis
 - (C) Dilation of the pampiniform plexus of veins around the testis
 - (D) Persistence of a patent processus vaginalis
 - (E) Torsion of the left testis
51. A 27-year-old nurse comes to the emergency department because of nervousness, dizziness, palpitations, and excess perspiration for the past 3 hours. She has had similar episodes over the past 6 months. The symptoms improve following ingestion of orange juice or soft drinks. She says that she has had a great deal of stress. She has been drinking two alcoholic beverages daily for the past month; before this time, she seldom drank alcohol. Examination shows no abnormalities. Her serum glucose concentration is 30 mg/dL. Intravenous glucose is administered, and the patient's symptoms improve. Which of the following is the most appropriate next step in diagnosis?
- (A) Liver tests
 - (B) Measurement of serum proinsulin and insulin antibodies
 - (C) Measurement of serum cortisol and ACTH concentrations
 - (D) Measurement of serum growth hormone and plasma somatomedin-C concentrations
 - (E) Measurement of serum insulin and C-peptide concentrations

52. A 38-year-old woman comes to the physician because of a low-grade fever and generalized rash for 4 days. She is currently receiving cefazolin therapy for chronic osteomyelitis. Her temperature is 38.2°C (100.8°F), blood pressure is 150/108 mm Hg, and pulse is 100/min. There is a faint diffuse maculopapular rash. Examination of the back shows no costovertebral angle tenderness. Cardiac and pulmonary examinations show no abnormalities. Laboratory studies show:

Leukocyte count	10,800/mm ³
Segmented neutrophils	60%
Bands	8%
Eosinophils	4%
Lymphocytes	20%
Monocytes	8%
Serum	
Urea nitrogen	20 mg/dL
Creatinine	1.6 mg/dL
Urine	
WBC	12/hpf
RBC	8/hpf
RBC casts	none
WBC casts	rare

Eosinophils are found in the urine sediment. Which of the following is the most likely explanation for these findings?

- (A) Acute tubular necrosis
 - (B) Fibromuscular dysplasia
 - (C) Interstitial nephropathy
 - (D) Polyarteritis nodosa
 - (E) Pyelonephritis
 - (F) Wegener's granulomatosis
53. A 25-year-old man is brought to the emergency department after being discovered semiconscious and incoherent at home. On arrival, he is stuporous. His blood pressure is 105/70 mm Hg, pulse is 80/min, and respirations are 12/min. Examination shows cool, damp skin. The pupils are pinpoint and react sluggishly to light. Which of the following is the most likely substance taken?
- (A) Alcohol
 - (B) Barbiturates
 - (C) Cocaine
 - (D) Heroin
 - (E) LSD
54. Three days after hospitalization for diabetic ketoacidosis, an 87-year-old woman refuses insulin injections. She says that her medical condition has declined so much that she no longer wishes to go on living; she is nearly blind and will likely require bilateral leg amputations. She reports that she has always been an active person and does not see how her life will be of value anymore. She has no family and most of her friends are sick or deceased. On mental status examination, she is alert and cooperative. She accurately describes her medical history and understands the consequences of refusing insulin. There is no evidence of depression. She dismisses any attempts by the physician to change her mind, saying that the physician is too young to understand her situation. She says, "I know I will die, and this is what I want." Which of the following is the most appropriate next step in management?
- (A) Discharge the patient after she has signed an "against medical advice" form
 - (B) Seek a court order to appoint a legal guardian
 - (C) Offer insulin but allow the patient to refuse it
 - (D) Admit to the psychiatric unit
 - (E) Administer insulin against the patient's wishes

55. A 5-year-old boy is brought to the physician by his mother because of a 2-day history of a low-grade fever, cough, and runny nose. His temperature is 38°C (100.4°F). Examination findings are consistent with a diagnosis of a common cold. The physician refers to a randomized, double-blind, placebo-controlled clinical trial that evaluated the effectiveness of a new drug for the treatment of the common cold. The mean time for resolution of symptoms for patients receiving the new drug was 6.4 days, compared with a mean time of 6.7 days for patients receiving the placebo ($p=0.04$). Which of the following is the most appropriate interpretation of these study results?
- (A) The findings are clinically and statistically significant
 - (B) The findings are clinically insignificant but statistically significant
 - (C) The findings are clinically significant but statistically insignificant
 - (D) The findings are neither clinically nor statistically significant
56. A 22-year-old man is brought to the emergency department 30 minutes after he sustained a gunshot wound to the abdomen. His pulse is 120/min, respirations are 28/min, and blood pressure is 70/40 mm Hg. Breath sounds are normal on the right and decreased on the left. Abdominal examination shows an entrance wound in the left upper quadrant at the midclavicular line below the left costal margin. There is an exit wound laterally in the left axillary line at the 4th rib. Intravenous fluid resuscitation is begun. Which of the following is the most appropriate next step in management?
- (A) Upright x-ray of the chest
 - (B) CT scan of the chest
 - (C) Intubation and mechanical ventilation
 - (D) Peritoneal lavage
 - (E) Left tube thoracostomy
57. A 19-year-old man comes to the physician because of a 3-week history of malaise, generalized fatigue, swelling of his legs, and dark urine. He has no known sick contacts. There is no personal or family history of serious illness. He takes no medications. His temperature is 37°C (98.6°F), pulse is 82/min, respirations are 14/min, and blood pressure is 152/91 mm Hg. Examination shows 2+ pretibial edema bilaterally. The remainder of the examination shows no abnormalities. Laboratory studies show:

Hemoglobin	10.4 g/dL
Leukocyte count	5000/mm ³
Platelet count	250,000/mm ³
Serum	
Na ⁺	135 mEq/L
K ⁺	4.9 mEq/L
Cl ⁻	101 mEq/L
HCO ₃ ⁻	19 mEq/L
Urea nitrogen	68 mg/dL
Creatinine	4.6 mg/dL
Urine	
Blood	3+
Protein	3+
RBC	5–7/hpf with dysmorphic features
RBC casts	numerous

Serum complement concentrations are within the reference ranges. Renal ultrasonography shows no abnormalities. A renal biopsy specimen shows a crescent formation in the glomeruli and immune complex deposition along the basement membrane. The most appropriate next step in management is administration of which of the following?

- (A) Oral azathioprine
- (B) Oral lisinopril
- (C) Intravenous fluids
- (D) Intravenous furosemide
- (E) Intravenous methylprednisolone

58. A previously healthy 17-year-old girl comes to the physician because of a 2-month history of exercise-induced cough and nasal congestion. She plays field hockey and has noticed she coughs when running up and down the field. The cough is nonproductive and resolves with rest. She has not had chest pain or palpitations. She takes no medications and does not smoke. Her sister has asthma. The patient appears well. Her pulse is 68/min, respirations are 16/min, and blood pressure is 100/75 mm Hg. Pulse oximetry on room air shows an oxygen saturation of 99%. Cardiopulmonary examination shows no abnormalities. An x-ray of the chest shows no abnormalities. Spirometry shows an FEV₁:FVC ratio of 90% and an FEV₁ of 90% of predicted. Which of the following is the most likely diagnosis?

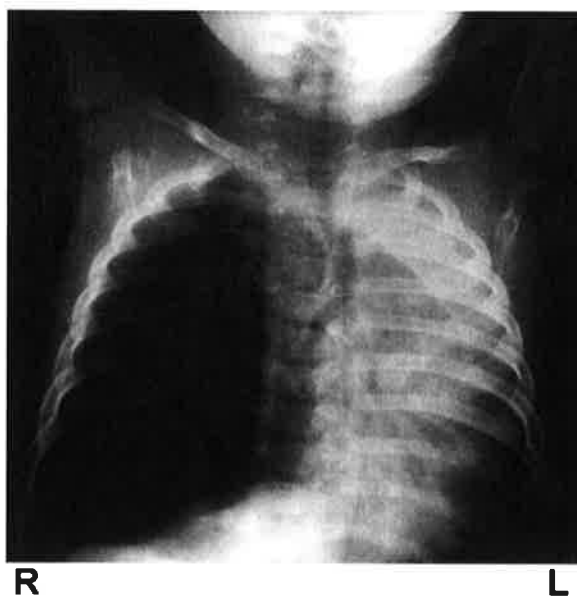
(A) Asthma
 (B) Chronic bronchitis
 (C) Gastroesophageal reflux disease
 (D) Postnasal drip syndrome
 (E) Variable endothoracic upper airway obstruction

59. A 62-year-old white man comes to the physician because of an 8-month history of progressive pain and stiffness of his hands. The stiffness is worse at the end of the day. He has a 1-year history of fatigue and increased urination. He has no history of serious illness and takes no medications. His last visit to a physician was 10 years ago. He does not smoke or drink alcohol. He is 185 cm (6 ft 1 in) tall and weighs 82 kg (180 lb); BMI is 24 kg/m². His pulse is 84/min, and blood pressure is 136/82 mm Hg. Examination shows dark brown skin. S₁ and S₂ are normal. An S₃ is heard at the apex. There is mild tenderness over the second and third metacarpophalangeal joints bilaterally without synovial thickening. Heberden nodes are present over the distal interphalangeal joints of the index and ring fingers bilaterally. Laboratory studies show:

Hemoglobin	16 g/dL
Leukocyte count	7700/mm ³
Platelet count	332,000/mm ³
Serum	
Glucose	182 mg/dL
Albumin	3.4 g/dL
Total bilirubin	1.1 mg/dL
Alkaline phosphatase	52 U/L
AST	55 U/L
ALT	68 U/L
Hepatitis B surface antigen	negative
Hepatitis C antibody	negative
Rheumatoid factor	negative

Which of the following is most likely to have prevented this patient's condition?

- (A) Calcium supplementation
 (B) Enalapril therapy
 (C) Metformin therapy
 (D) Methotrexate therapy
 (E) Phlebotomy
60. A 32-year-old man who is a jackhammer operator comes to the physician because of pain and swelling of his right arm for 3 days. The symptoms are moderately exacerbated by exertion. Examination of the right upper extremity shows erythema and moderate edema. Capillary refill time is less than 3 seconds. Which of the following is the most likely diagnosis?
- (A) Axillary-subclavian venous thrombosis
 (B) Deep venous valvular insufficiency
 (C) Superficial thrombophlebitis of the basilic vein
 (D) Superior vena cava syndrome
 (E) Thoracic outlet syndrome



61. A 4-year-old boy with asthma becomes limp during treatment with inhaled albuterol in the emergency department. Ten minutes ago, he received intravenous methylprednisolone for an acute exacerbation, and he was alert and oriented at that time. He received the diagnosis of asthma 2 years ago and has been admitted to the hospital for acute exacerbations eight times since then. Current medications include albuterol and montelukast. He appears pale and gasps and moans as he attempts to breathe. He responds to voice. His temperature is 36°C (96.8°F), pulse is 160/min and thready, respirations are 18/min, and blood pressure is 50/20 mm Hg. The skin is cold to the touch. Pulmonary examination shows poor air movement, especially on the left. No wheezes are heard. The point of maximal impulse is 2 cm to the left of the midclavicular line in the sixth intercostal space. A chest x-ray is shown. Which of the following is the most likely underlying cause of this patient's hypotension?

- (A) Adverse effect of albuterol
- (B) Adverse effect of methylprednisolone
- (C) Atelectasis of the left lung
- (D) Decrease in cardiac output
- (E) Severe bronchospasm

62. A 62-year-old woman comes to the physician for a routine health maintenance examination. On questioning, she has had fatigue, constipation, and a 9-kg (20-lb) weight gain during the past year. She receives estrogen replacement therapy. Serum lipid studies were within the reference range 5 years ago. She is 157 cm (5 ft 2 in) tall and weighs 77 kg (170 lb); BMI is 31 kg/m². Physical examination shows no other abnormalities. Serum lipid studies today show:

Total cholesterol	269 mg/dL
HDL-cholesterol	48 mg/dL
LDL-cholesterol	185 mg/dL
Triglycerides	180 mg/dL

Which of the following is the most likely cause?

- (A) Alcohol
- (B) Diabetes mellitus
- (C) Estrogen deficiency
- (D) Estrogen replacement therapy
- (E) Hypothyroidism
- (F) Thiazide diuretic therapy

63. A previously healthy 32-year-old man is brought to the emergency department after being found unconscious on the floor at his workplace. On arrival, he is obtunded. He is intubated and mechanical ventilation is begun. Examination shows flaccid paralysis on the right. A CT scan of the head shows a large evolving cerebral infarction on the left. Carotid duplex ultrasonography shows dissection of the left carotid artery. After receiving intensive medical care for 6 hours, the patient develops decerebrate posturing and becomes hemodynamically unstable. Vasopressor therapy is begun. A second CT scan of the head shows a massive left hemispheric cerebral infarction with severe edema and herniation. The physician determines that surgical intervention is not indicated because of the patient's poor prognosis. The patient's driver's license indicates that he wishes to be an organ donor. The physician meets with the patient's family and informs them about the patient's prognosis, and they are devastated. During the meeting, they say that they were unaware of his willingness to be an organ donor and agree that he should not receive cardiopulmonary resuscitation. Which of the following is the most appropriate next step with respect to organ donation?

- (A) Arrange for the regional organ procurement organization to address the issue with the patient's family
- (B) Delay further consideration of the issue until after 24 hours of aggressive care
- (C) Delay further consideration of the issue until the family seems ready
- (D) Initiate organ donation at this time

64. A 6-year-old boy is brought to the emergency department 2 hours after injuring his arm when he fell out of a tree. His mother says that he is extremely active and likes to climb. During the past year, he fractured his right tibia after falling off a trampoline and sustained a concussion after falling off his bicycle. She says that his teachers reprimand him frequently for running wildly in the classroom, talking excessively, and getting out of his seat; he often forgets to turn in his homework. His parents are currently divorcing. His father has a history of illicit drug use. The patient is at the 50th percentile for height and weight. His pulse is 80/min, and blood pressure is 100/80 mm Hg. Physical examination shows a dislocated left shoulder, healing abrasions over the elbows, and ecchymoses in various stages of healing over the knees. Mental status examination shows a neutral affect. He says that he likes to run and climb trees. Which of the following is the most likely explanation for these findings?

- (A) Attention-deficit/hyperactivity disorder
- (B) Conduct disorder
- (C) Learning disorder
- (D) Seizure disorder
- (E) Age-appropriate behavior

65. A previously healthy 18-year-old man is brought to the emergency department because of abdominal pain and nausea for 6 hours. He has had decreased appetite for the past week. He takes no medications. He drinks one to two beers daily and occasionally more on weekends. He does not use illicit drugs. His temperature is 37.8°C (100°F), pulse is 120/min, respirations are 24/min, and blood pressure is 105/60 mm Hg. Abdominal examination shows diffuse tenderness with no guarding or rebound. Bowel sounds are normal. Laboratory studies show:

Serum	
Na ⁺	135 mEq/L
Cl ⁻	98 mEq/L
K ⁺	3.8 mEq/L
HCO ₃ ⁻	16 mEq/L
Glucose	360 mg/dL
Ketones	present
Urine ketones	present

Arterial blood gas analysis on room air shows a pH of 7.30. Which of the following is the most likely diagnosis?

- (A) Acute appendicitis
- (B) Acute pancreatitis
- (C) Alcoholic ketoacidosis
- (D) Diabetic ketoacidosis
- (E) Lactic acidosis

66. A 42-year-old woman comes to the physician because of a 1-year history of vaginal bleeding for 2 to 5 days every 2 weeks. The flow varies from light to heavy with passage of clots. Menses previously occurred at regular 25- to 29-day intervals and lasted for 5 days with normal flow. She has no history of serious illness and takes no medications. She is sexually active with one male partner, and they use condoms inconsistently. Her mother died of colon cancer, and her maternal grandmother died of breast cancer. She is 163 cm (5 ft 4 in) tall and weighs 77 kg (170 lb); BMI is 29 kg/m². Her temperature is 36.6°C (97.8°F), pulse is 90/min, respirations are 12/min, and blood pressure is 100/60 mm Hg. The uterus is normal sized. The ovaries cannot be palpated. The remainder of the examination shows no abnormalities. Test of the stool for occult blood is negative. Which of the following is the most appropriate next step in diagnosis?

- (A) Barium enema
- (B) Progesterone challenge test
- (C) Colposcopy
- (D) Cystoscopy
- (E) Endometrial biopsy

67. A 15-year-old boy is brought to the physician because of fatigue since starting his freshman year of high school 3 months ago. He often falls asleep during class. He urinates four to five times nightly and often has difficulty falling asleep again. He has no history of serious illness and takes no medications. He is at the 20th percentile for height and above the 95th percentile for weight and BMI. Vital signs are within normal limits. Examination shows a velvety, hyperpigmented, macular rash over the neck and axillae. The remainder of the examination shows no abnormalities. Results of a complete blood count and serum electrolyte concentrations show no abnormalities. Additional laboratory studies show:

Serum glucose	134 mg/dL
Urine	
pH	5.5
Specific gravity	1.028
Glucose	1+
Ketones	negative

In addition to dietary counseling, which of the following is the most appropriate initial treatment?

- (A) Exercise program
 - (B) Increased fluid intake
 - (C) Cyclosporine therapy
 - (D) Insulin therapy
 - (E) Oral hypoglycemic agent
68. A 5-year-old girl is brought to the physician by her parents for evaluation of recurrent injuries. Her parents say that she started walking at the age of 14 months and since then has always seemed clumsier and had more injuries than other children. She has had increasingly frequent chest pain with exertion since starting a soccer program 3 months ago. She usually has pain or swelling of her knees or ankles after practice. She has been wearing glasses for 2 years. Her 16-year-old brother has required two operations for a severe rotator cuff injury he sustained while taking a shower, and she has a maternal cousin who died of a ruptured aortic aneurysm at the age of 26 years. Today, the patient walks with a limp. She is at the 99th percentile for height and 50th percentile for weight. A midsystolic click is heard at the apex. The left ankle is swollen and tender; range of motion is limited by pain. The joints of the upper and lower extremities are hypermobile, including 25 degrees of genu recurvatum, thumbs that may be extended to touch the forearms, and flexibility at the waist, with palms easily touching the floor with straight knees. Which of the following is the most appropriate next step in diagnosis?
- (A) Skeletal survey
 - (B) Echocardiography
 - (C) Bone scan
 - (D) MRI of the shoulder
 - (E) Aortic angiography

69. A 35-year-old woman comes to the physician because of two 12-hour episodes of dizziness over the past 3 months. During episodes, she experiences the acute onset of rotatory vertigo and imbalance, decreased hearing, tinnitus, a sense of fullness of the right ear, and vomiting. Examination shows a mild hearing loss of the right ear. Which of the following is the most likely diagnosis?
- (A) Acoustic neuroma
 - (B) Benign positional vertigo
 - (C) Brain stem transient ischemic attacks
 - (D) Meniere's disease
 - (E) Viral labyrinthitis
70. A previously healthy 15-year-old boy is brought to the emergency department in August 1 hour after the onset of headache, dizziness, nausea, and one episode of vomiting. His symptoms began during the first hour of full-contact football practice in full uniform. He reported feeling weak and faint but did not lose consciousness. He vomited once after drinking water. On arrival, he is diaphoretic. He is not oriented to person, place, or time. His temperature is 39.5°C (103.1°F), pulse is 120/min, respirations are 40/min, and blood pressure is 90/65 mm Hg. Examination, including neurologic examination, shows no other abnormalities. Which of the following is the most appropriate next step in management?
- (A) Obtain a CT scan of the head
 - (B) Administer sodium chloride tablets
 - (C) Administer intravenous fluids
 - (D) Immerse the patient in an ice water bath
 - (E) Obtain a lumbar puncture
71. A 27-year-old man comes to the physician for a routine health maintenance examination. He says he feels well and has not had any problems. He has no history of serious illness. He occasionally takes acetaminophen for headaches. His brother had kidney failure at the age of 32 years. There is no family history of liver disease. The patient does not smoke. He occasionally drinks a beer or a glass of wine. He has never used intravenous illicit drugs. He has had 10 lifetime male sexual partners and uses condoms consistently. He has been in a monogamous relationship for the past 3 years. His temperature is 37°C (98.6°F), pulse is 72/min, and blood pressure is 118/70 mm Hg. Examination shows no abnormalities except for mild scleral icterus. Laboratory studies show:

Hematocrit	44%
Leukocyte count	5000/mm ³
Prothrombin time	11 sec (INR=1)
Serum	
Na ⁺	141 mEq/L
K ⁺	4.2 mEq/L
Cl ⁻	104 mEq/L
HCO ₃ ⁻	24 mEq/L
Urea nitrogen	14 mg/dL
Creatinine	0.8 mg/dL
Bilirubin, total	3.0 mg/dL
Direct	0.2 mg/dL
AST	14 U/L
ALT	15 U/L

Serologic testing for hepatitis A and B is negative. Abdominal ultrasonography shows no abnormalities. Which of the following is the most likely cause of these findings?

- (A) Decreased conjugation of bilirubin
- (B) Decreased excretion of bilirubin by hepatocytes
- (C) Decreased intracellular storage of bilirubin
- (D) Delayed uptake of bilirubin
- (E) Hemolysis

72. A 52-year-old woman has had dyspnea and hemoptysis for 1 month. She has a history of rheumatic fever as a child and has had a cardiac murmur since early adulthood. Her temperature is 36.7°C (98°F), pulse is 130/min and irregularly irregular, respirations are 20/min, and blood pressure is 98/60 mm Hg. Jugular venous pressure is not increased. Bilateral crackles are heard at the lung bases. There is an opening snap followed by a low-pitched diastolic murmur at the third left intercostal space. An x-ray of the chest shows left atrial enlargement, a straight left cardiac border, and pulmonary venous engorgement. Which of the following is the most likely explanation for these findings?
- (A) Aortic valve insufficiency
 - (B) Aortic valve stenosis
 - (C) Mitral valve insufficiency
 - (D) Mitral valve stenosis
 - (E) Tricuspid valve insufficiency
73. A 21-year-old woman comes to the physician for preconceptional advice. She is recently married and would like to conceive within the next year. She does not eat meat, fish, or dairy products and wishes to decrease the risks of her diet on her baby. Menses occur at regular 28-day intervals and last 5 days. She does not smoke or drink alcohol. She takes no medications. She is 157 cm (5 ft 2 in) tall and weighs 50 kg (110 lb); BMI is 20 kg/m². Physical examination shows no abnormalities. Pelvic examination shows a normal appearing vagina, cervix, uterus, and adnexa. Which of the following is most likely to decrease the risk of fetal anomalies in this patient?
- (A) Adjusting diet to include more sources of protein during the first trimester
 - (B) Beginning folic acid supplementation prior to conception
 - (C) Calcium supplementation during the first trimester
 - (D) Iron supplementation during the first trimester
 - (E) Soy protein shakes throughout pregnancy and lactation
74. A 55-year-old man has had crushing substernal chest pain on exertion over the past 6 weeks. He had a myocardial infarction 2 months ago. He takes nitroglycerin as needed and one aspirin daily. He has smoked two packs of cigarettes daily for 30 years. Examination shows normal heart sounds and no carotid or femoral bruits. Treatment with a β -adrenergic blocking agent is most likely to improve his symptoms due to which of the following mechanisms?
- (A) Decreasing myocardial contractility
 - (B) Dilating the coronary arteries
 - (C) Peripheral vasodilation
 - (D) Preventing fibrin and platelet plugs
75. A 72-year-old woman with advanced ovarian cancer metastatic to the liver is brought to the physician by her son because she cries all the time and will not get out of bed. On a 10-point scale, she rates the pain as a 1 to 2. She also has hypertension and major depressive disorder. She has received chemotherapy for 2 years. Current medications also include oxycodone (10 mg twice daily), hydrochlorothiazide (25 mg/d), and fluoxetine (20 mg/d). She is 165 cm (5 ft 5 in) tall and weighs 66 kg (145 lb); BMI is 24 kg/m². Her temperature is 37°C (98.6°F), pulse is 110/min, respirations are 12/min, and blood pressure is 120/80 mm Hg. Examination shows a firm, distended abdomen with moderate tenderness over the liver. On mental status examination, she is oriented to person, place, and time. She has good eye contact but appears sad and cries easily. Which of the following is the most appropriate next step in management?
- (A) Reassurance
 - (B) Assess for suicidal ideation
 - (C) Begin dextroamphetamine therapy
 - (D) Increase oxycodone dosage
 - (E) Restart chemotherapy

76. An obese 33-year-old woman has had four 12-hour episodes of severe, sharp, penetrating pain in the right upper quadrant of the abdomen associated with vomiting but no fever. She has no diarrhea, dysuria, or jaundice and is asymptomatic between episodes. There is slight tenderness to deep palpation in the right upper quadrant. Which of the following is the most appropriate next step in diagnosis?
- (A) Supine and erect x-rays of the abdomen
 - (B) Upper gastrointestinal series
 - (C) Ultrasonography of the upper abdomen
 - (D) CT scan of the abdomen
 - (E) HIDA scan of the biliary tract
77. A previously healthy 24-year-old woman comes to the physician because of a low-grade fever and a nonproductive cough for 7 days. She has been able to continue her daily activities. Her temperature is 37.7°C (99.9°F). A few scattered inspiratory crackles are heard in the thorax. An x-ray of the chest shows patchy infiltrates in both lungs. Which of the following is the most appropriate initial pharmacotherapy?
- (A) Amoxicillin
 - (B) Cefaclor
 - (C) Ciprofloxacin
 - (D) Erythromycin
 - (E) Trimethoprim-sulfamethoxazole
78. For 8 weeks, a 52-year-old man with a 5-year history of type 2 diabetes mellitus has had deep burning pain in the ball of his right foot and big toe when the foot is raised above chest concentration. He also has cramping in his right calf when he walks more than 50 feet. He has smoked two packs of cigarettes daily for 30 years. Femoral pulses are palpable; pedal pulses are absent. Which of the following is the most likely diagnosis?
- (A) Aortoiliac stenosis
 - (B) Femoral popliteal stenosis
 - (C) Mononeuropathy
 - (D) Vasculitis
 - (E) Venous stasis
79. An 18-year-old primigravid woman comes for her initial prenatal visit at 16 weeks' gestation. She is not sure about the date of her last menstrual period but says that the pregnancy probably occurred immediately after she stopped taking oral contraceptives 5 months ago. Maternal serum α -fetoprotein (MSAFP) concentration is increased to 3 multiples of the median. Which of the following is the most appropriate next step in management?
- (A) Repeat measurement of MSAFP concentration
 - (B) Triple screening for MSAFP, serum β -hCG, and serum estriol concentrations
 - (C) Ultrasonography
 - (D) Amniocentesis for measurement of α -fetoprotein concentration
 - (E) Amniocentesis for chromosomal analysis
80. Five years after being shot in the right thigh, a 21-year-old man comes to the emergency department because of a buzzing sensation adjacent to the scar. At the time of the initial wound, he was discharged after 6 hours of observation with no fractures or soft-tissue swelling. A loud murmur is heard on auscultation; there is a thrill. He has dilated varicose veins with incompetent valves in the lower leg. Which of the following is the most likely diagnosis?
- (A) Arterial spasm
 - (B) Arteriovenous fistula
 - (C) Deep venous thrombosis
 - (D) Occlusion of the superficial femoral artery
 - (E) Pseudoaneurysm

Sample Questions

Block 3 (Questions 81-120)

81. An 82-year-old woman with a 20-year history of urinary incontinence has had a mild exacerbation of her symptoms over the past 3 months. Urine loss generally occurs when she is carrying out daily activities such as shopping or driving and is not affected by coughing or sneezing. She underwent appendectomy at the age of 24 years. She has one daughter. She takes no medications. Pelvic examination shows an atrophic cervix without a palpable uterus or an adnexal mass. Laboratory studies show:

Hemoglobin	13 g/dL
Serum	
Na ⁺	140 mEq/L
Cl ⁻	105 mEq/L
K ⁺	4.5 mEq/L
HCO ₃ ⁻	25 mEq/L
Urea nitrogen	15 mg/dL
Glucose	120 mg/dL
Creatinine	1.1 mg/dL
Urine	
Epithelial cells	5–10
Glucose	negative
WBC	0–1/hpf
Bacteria	occasional

Which of the following is the most likely cause of this patient's urinary incontinence?

- (A) Detrusor instability
 - (B) Hyperglycemia
 - (C) Neurogenic bladder
 - (D) Obstructive uropathy
 - (E) Urinary tract infection
82. A 37-year-old man comes to the physician because of nonradiating low back pain for 3 days. The pain began after he worked in his yard. He has not had any change in bowel movements or urination. He had one similar episode 3 years ago that resolved spontaneously. Vital signs are within normal limits. Examination of the back shows bilateral paravertebral muscle spasm. Range of motion is limited by pain. Straight-leg raising is negative. In addition to analgesia, which of the following is the most appropriate next step in management?
- (A) Bed rest
 - (B) Regular activity
 - (C) X-rays of the spine
 - (D) MRI of the spine
 - (E) Lumbar spine traction
83. A 19-year-old woman noticed a mass in her left breast 2 weeks ago while doing monthly breast self-examination. Her mother died of metastatic breast cancer at the age of 40 years. Examination shows large dense breasts; a 2-cm, firm, mobile mass is palpated in the upper outer quadrant of the left breast. There are no changes in the skin or nipple, and there is no palpable axillary adenopathy. Which of the following is the most likely diagnosis?
- (A) Fibroadenoma
 - (B) Fibrocystic changes of the breast
 - (C) Infiltrating ductal carcinoma
 - (D) Intraductal papilloma
 - (E) Lobular carcinoma



84. A 67-year-old woman comes to the physician 1 month after noticing a nontender nodule on the back of her left hand. She initially thought it was an insect bite, but it has grown in size over the past week. It bleeds when she picks at it. She has no history of serious illness. She lives in a retirement community in Florida and frequently plays golf and tennis. Examination of the dorsum of the left hand shows a 2.5-cm lesion. Photographs of the lesion are shown. Which of the following is the most appropriate next step in management?
- (A) Observation
 - (B) Topical application of fluorouracil
 - (C) Sentinel lymph node biopsy
 - (D) Cryosurgery
 - (E) Excision of the lesion
-
85. A 2-week-old newborn is brought to the physician because his lips have turned blue on three occasions during feeding; he also sweats during feeding. He was born at 38 weeks' gestation and weighed 2466 g (5 lb 7 oz); he currently weighs 2778 g (6 lb 2 oz). His temperature is 37.8°C (100°F), pulse is 170/min, respirations are 44/min, and blood pressure is 75/45 mm Hg. A grade 3/6 harsh systolic ejection murmur is heard at the left upper sternal border. An x-ray of the chest shows a small boot-shaped heart and decreased pulmonary vascular markings. Which of the following is the most likely diagnosis?
- (A) Anomalous coronary vessels
 - (B) Atrial septal defect
 - (C) Endocardial fibroelastosis
 - (D) Tetralogy of Fallot
 - (E) Total anomalous pulmonary venous return
86. A 15-year-old girl is brought to the physician 3 months after she had a blood pressure of 150/95 mm Hg at a routine examination prior to participation in school sports. She is asymptomatic and has no history of serious illness. Twelve months ago, she was diagnosed with a urinary tract infection and treated with oral trimethoprim-sulfamethoxazole. She currently takes no medications. Subsequent blood pressure measurements on three separate occasions since the last visit have been: 155/94 mm Hg, 145/90 mm Hg, and 150/92 mm Hg. She is at the 50th percentile for height and 95th percentile for weight. Her blood pressure today is 150/90 mm Hg confirmed by a second measurement, pulse is 80/min, and respirations are 12/min. Examination shows no other abnormalities. Her hematocrit is 40%. Urinalysis is within normal limits. Cardiac and renal ultrasonography shows no abnormalities. Which of the following is the most appropriate next step in management?
- (A) Exercise and weight reduction program
 - (B) Measurement of urine catecholamine concentrations
 - (C) Measurement of urine corticosteroid concentrations
 - (D) Captopril therapy
 - (E) Hydrochlorothiazide therapy

87. A 27-year-old woman, gravida 2, para 1, at 12 weeks' gestation comes to the physician for a prenatal visit. She feels well. Pregnancy and delivery of her first child were uncomplicated. Medications include folic acid and a multivitamin. Her temperature is 37.2°C (99°F), and blood pressure is 108/60 mm Hg. Pelvic examination shows a uterus consistent in size with a 12-week gestation. Urine dipstick shows leukocyte esterase; urinalysis shows WBCs and rare gram-negative rods. Which of the following is the most appropriate next step in management?
- (A) Recommend drinking 8 oz of cranberry juice daily
 - (B) Oral amoxicillin therapy
 - (C) Oral metronidazole therapy
 - (D) Intravenous cefazolin therapy
 - (E) Intravenous pyelography
 - (F) Cystoscopy
88. A 47-year-old man comes to the physician 12 hours after the sudden onset of a severe occipital headache and stiff neck. He has not had any other symptoms and has no history of severe headache. He has hypertension and gastroesophageal reflux disease. Current medications include hydrochlorothiazide and ranitidine. He is oriented to person, place, and time. His temperature is 36.7°C (98.1°F), pulse is 100/min, and blood pressure is 160/90 mm Hg. Range of motion of the neck is decreased due to pain. Neurologic examination shows no focal findings. Which of the following is the most likely diagnosis?
- (A) Cluster headache
 - (B) Meningitis
 - (C) Migraine
 - (D) Subarachnoid hemorrhage
 - (E) Tension-type headache
89. A 72-year-old man comes to the physician because of a 7-month history of leg weakness and dry eyes and mouth. He also has had a 10.4-kg (23-lb) weight loss over the past 4 months despite no change in appetite. He has smoked one and a half packs of cigarettes daily for 50 years. He drinks 4 oz of alcohol daily. He has peptic ulcer disease and emphysema. Medications include cimetidine, theophylline, and low-dose prednisone. Examination shows mild ptosis. He has a barrel-shaped chest. Breath sounds are distant. There is moderate weakness of proximal muscles of the lower extremities. Reflexes are absent. He has difficulty rising from a chair. Sensory examination shows no abnormalities. An x-ray shows a hyperinflated chest and a 3 x 4-cm mass in the right hilum. His neurologic findings are most likely due to a lesion involving which of the following?
- (A) Muscle membrane
 - (B) Parasympathetic nervous system
 - (C) Peripheral nerve
 - (D) Presynaptic neuromuscular junction
 - (E) Sympathetic nervous system
90. A 65-year-old man who is quadriplegic as a result of multiple sclerosis is hospitalized for treatment of left lower lobe pneumonia. His temperature is 38.1°C (100.5°F), pulse is 95/min, respirations are 12/min, and blood pressure is 120/80 mm Hg. He appears malnourished. Rhonchi are heard at the left lower lobe of the lung on auscultation. Examination of the heart, lymph nodes, abdomen, and extremities shows no abnormalities. There is a 1-cm area of erythema over the sacrum with intact skin and no induration. Neurologic examination shows quadriparesis. Test of the stool for occult blood is negative. Which of the following is the most effective intervention for this patient's skin lesion?
- (A) Frequent turning
 - (B) Use of wet to dry dressings
 - (C) Whirlpool therapy
 - (D) Broad-spectrum antibiotic therapy
 - (E) Surgical debridement

91. A 45-year-old woman has a 2-week history of increased anxiety, abdominal discomfort, irritability, and difficulty concentrating; she was robbed at knifepoint in a parking lot 3 weeks ago. She takes levothyroxine for hypothyroidism and uses an over-the-counter inhaler as needed for exercise-induced asthma. Her blood pressure is 140/80 mm Hg, and pulse is 100/min. Examination shows dry skin and hair. She is cooperative but appears anxious, glancing around quickly when a loud noise is heard outside the office. Leukocyte count is $12,000/\text{mm}^3$, and serum thyroid-stimulating hormone concentration is $5.0 \mu\text{U/mL}$. An ECG shows sinus tachycardia. Which of the following is the most likely diagnosis?
- (A) Acute stress disorder
 - (B) Agoraphobia
 - (C) Generalized anxiety disorder
 - (D) Hypothyroidism
 - (E) Panic disorder
92. An 87-year-old woman is brought to the physician by her son because of progressive memory loss over the past 2 years. Her son says that she repeats herself frequently and has been forgetting to take her routine medications. She takes hydrochlorothiazide for mild systolic hypertension and levothyroxine for hypothyroidism. She had vulvar cancer 10 years ago treated with wide excision. Her blood pressure is 138/78 mm Hg. Physical examination is within normal limits for her age. Mini-Mental State Examination score is 23/30. Laboratory studies, including serum vitamin B₁₂ (cyanocobalamin), thyroxine (T₄), and thyroid-stimulating hormone concentrations, are within normal limits. A CT scan of the head shows mild volume loss. Which of the following is the most appropriate pharmacotherapy?
- (A) β -Adrenergic agonist
 - (B) Cholinesterase inhibitor
 - (C) Dopamine agonist
 - (D) Prednisone
 - (E) Selective serotonin reuptake inhibitor
93. A 37-year-old woman, gravida 5, para 4, at 34 weeks' gestation comes to the emergency department because of vaginal bleeding for 2 hours. She has had no prenatal care. Her second child was delivered by lower segment transverse cesarean section because of a nonreassuring fetal heart rate; her other three children were delivered vaginally. Her pulse is 92/min, respirations are 18/min, and blood pressure is 134/76 mm Hg. The abdomen is nontender, and no contractions are felt. There is blood on the vulva, the introitus, and on the medial aspect of each thigh. The fetus is in a transverse lie presentation. The fetal heart rate is 144/min. Which of the following is the most likely diagnosis?
- (A) Abruptio placentae
 - (B) Amniotic fluid embolism
 - (C) Latent phase of labor
 - (D) Placenta previa
 - (E) Ruptured uterus
 - (F) Ruptured vasa previa
94. A previously healthy 14-year-old girl is brought to the physician because of a 2-day history of fever and pain and swelling of the right knee. She remembers injuring the knee while playing soccer last week, but she was able to finish the game. She has no history of rash or joint pain. Her sister has inflammatory bowel disease. The patient's temperature is 39°C (102.2°F), blood pressure is 110/80 mm Hg, pulse is 95/min, and respirations are 20/min. Examination of the right knee shows swelling, tenderness, warmth, and erythema; range of motion is limited. Which of the following is the most appropriate next step in management?
- (A) X-ray of the right knee
 - (B) Gastrointestinal series with small-bowel follow-through
 - (C) Nuclear scan of the right knee
 - (D) MRI of the right knee
 - (E) Antibiotic therapy
 - (F) Arthrocentesis

95. A 77-year-old man is brought to the physician because of a 12-hour history of word-finding difficulty and weakness and sensory loss of the right arm and leg. He has no history of similar symptoms. He has type 2 diabetes mellitus, hypertension, and atrial fibrillation. Current medications include metformin, lisinopril, and aspirin. He is alert. His pulse is 80/min and irregular, respirations are 16/min, and blood pressure is 170/90 mm Hg. He follows commands but has nonfluent aphasia. There is moderate weakness and decreased sensation of the right upper and lower extremities. Deep tendon reflexes are 2+ bilaterally. Babinski sign is present on the right. His serum glucose concentration is 162 mg/dL. Which of the following is the most appropriate next step in diagnosis?
- (A) Carotid duplex ultrasonography
 - (B) CT scan of the head
 - (C) EEG
 - (D) Lumbar puncture
 - (E) Cerebral angiography
96. A 62-year-old man comes to the physician because of a 2-month history of progressive fatigue and ankle swelling. He had an anterior myocardial infarction 3 years ago and has had shortness of breath with mild exertion since then. Current medications include labetalol and daily aspirin. He has smoked one-half pack of cigarettes daily for 30 years. His pulse is 100/min and regular, respirations are 20/min, and blood pressure is 130/75 mm Hg. There are jugular venous pulsations 5 cm above the sternal angle. Crackles are heard at both lung bases. Cardiac examination shows an S₃ gallop. There is edema from the midtibia to the ankle bilaterally. Further evaluation of this patient is most likely to show which of the following findings?
- (A) Decreased pulmonary capillary wedge pressure
 - (B) Impaired contractility of the left ventricle
 - (C) Prolapse of the mitral valve
 - (D) Thrombosis of the superior vena cava
 - (E) Ventricular septal defect
97. A 19-year-old college student comes to the physician because of vaginal irritation and pain with urination for 5 days. Two weeks ago, she had streptococcal pharyngitis treated with amoxicillin. She has been sexually active with two partners over the past year; she uses condoms for contraception. Her last menstrual period was 1 week ago. Her temperature is 37.2°C (99°F), and blood pressure is 90/60 mm Hg. Pelvic examination shows erythema of the vulva and vagina and a thick white vaginal discharge. The pH of the discharge is 4. Which of the following is the most likely cause of these findings?
- (A) Bacterial vaginosis
 - (B) Candidiasis
 - (C) *Chlamydia trachomatis* infection
 - (D) *Escherichia coli* infection
 - (E) *Neisseria gonorrhoeae* infection
 - (F) Trichomoniasis
98. A 67-year-old woman comes to the physician because of easy bruising for 4 months. She has a history of lung cancer treated with radiation therapy 6 months ago. She has a 2-year history of hypertension treated with a thiazide diuretic and an angiotensin-converting enzyme (ACE) inhibitor. Examination, including neurologic examination, shows no abnormalities except for multiple ecchymoses. Her hemoglobin concentration is 13 g/dL, leukocyte count is 5000/mm³, and platelet count is 35,000/mm³. A serum antiplatelet antibody assay is negative. Which of the following is the most appropriate next step in diagnosis?
- (A) Bone scan
 - (B) CT scan of the abdomen
 - (C) CT scan of the chest
 - (D) Bronchoscopy
 - (E) Bone marrow aspiration

99. A 65-year-old woman has a 6-month history of progressive irritability, palpitations, heat intolerance, frequent bowel movements, and a 6.8-kg (15-lb) weight loss. She has had a neck mass for more than 10 years. ^{131}I scan shows an enlarged thyroid gland with multiple areas of increased and decreased uptake. Which of the following is the most likely diagnosis?
- (A) Defect in thyroxine (T_4) biosynthesis
 - (B) Graves' disease
 - (C) Multinodular goiter
 - (D) Riedel's thyroiditis
 - (E) Thyroid carcinoma
 - (F) Thyroiditis
 - (G) Toxic adenoma
 - (H) Triiodothyronine (T_3) thyrotoxicosis
100. A 52-year-old man comes to the physician with his wife because of a 1-year history of excessive daytime sleepiness. He does not think the symptoms are problematic, but his wife is concerned because he sometimes falls asleep on the sofa early in the evening when guests are present. He also once fell asleep while driving at night and drove off the road, narrowly avoiding injury. His wife says that he has always snored loudly, and over the past year, he has had episodes of choking or gasping for breath while sleeping. He is 178 cm (5 ft 10 in) tall and weighs 105 kg (231 lb); BMI is 33 kg/m^2 . His pulse is 76/min, respirations are 14/min, and blood pressure is 150/76 mm Hg. Physical and neurologic examinations show no other abnormalities. Which of the following is most likely to confirm the diagnosis?
- (A) 24-Hour ambulatory ECG monitoring
 - (B) Multiple sleep latency test
 - (C) Polysomnography
 - (D) CT scan of the head
 - (E) Laryngoscopy
101. A 22-year-old woman comes to the physician in October for a follow-up examination. She feels well. She has a 2-year history of type 1 diabetes mellitus controlled with insulin. She had a normal Pap smear 3 months ago and saw her ophthalmologist 6 months ago. Her 67-year-old grandmother has breast cancer. She is 168 cm (5 ft 6 in) tall and weighs 57 kg (125 lb); BMI is 20 kg/m^2 . Her hemoglobin A_{1c} is 6.2%, and fingerstick blood glucose concentration is 118 mg/dL. Which of the following health maintenance recommendations is most appropriate at this time?
- (A) Begin running for exercise
 - (B) Dietary modification for weight loss
 - (C) Human papillomavirus testing
 - (D) Mammography
 - (E) Influenza virus vaccine
 - (F) Supplementation with vitamins C and D
102. A 47-year-old woman comes to the physician because of persistent nonproductive cough for 6 weeks. She has not had fever or weight loss. She has hypertension treated with enalapril for the past 3 months. She does not smoke. There is no history of lung disease. She weighs 54 kg (120 lb) and is 163 cm (64 in) tall. Her temperature is 37°C (98.6°F), blood pressure is 130/80 mm Hg, pulse is 70/min, and respirations are 12/min. Examination and an x-ray of the chest show no abnormalities. Which of the following is the most likely mechanism of this patient's cough?
- (A) Decreased plasma renin activity
 - (B) Decreased serum angiotensin II concentrations
 - (C) Increased serum angiotensin I concentrations
 - (D) Increased serum bradykinin concentrations
 - (E) Increased serum histamine concentrations

103. A 42-year-old woman comes to the physician because of an 8-week history of intermittent nausea and abdominal pain that occurs 20 to 30 minutes after eating. The pain extends from the epigastrium to the right upper quadrant and is sometimes felt in the right scapula; it lasts about 30 minutes and is not relieved by antacids. The last episode occurred after she ate a hamburger and french fries. She has not had vomiting. She is currently asymptomatic. She is 165 cm (5 ft 5 in) tall and weighs 104 kg (230 lb); BMI is 38 kg/m². Examination shows no other abnormalities. Which of the following is the most appropriate next step in management?
- (A) Abdominal ultrasonography of the right upper quadrant
 - (B) Upper gastrointestinal series with small bowel follow-through
 - (C) CT scan of the abdomen
 - (D) Endoscopic retrograde cholangiopancreatography
 - (E) Elective cholecystectomy
 - (F) Immediate cholecystectomy
104. A 4-year-old boy is brought for a follow-up examination. He has a history of chronic recurrent otitis media and recently completed a 10-day course of antibiotics. His vital signs are within normal limits. Examination shows clear ear canals and intact tympanic membranes; a brown, irregular mass is visualized behind the tympanic membrane. Which of the following is the most likely explanation for these findings?
- (A) Epithelial tissue proliferation
 - (B) Lingual papillae loss
 - (C) Middle ear effusion
 - (D) Midface hypoplasia
 - (E) Nerve entrapment
 - (F) Olfactory hair cell degeneration
 - (G) Semicircular canal edema
 - (H) Tympanic membrane rupture
105. A 67-year-old woman has had fatigue, dry skin, brittle hair, swelling of the ankles, and cold intolerance for 1 year; she has gained 9 kg (20 lb) during this period. Her pulse is 55/min, and blood pressure is 150/90 mm Hg. She appears lethargic. Examination shows dry skin and a nontender thyroid gland that is enlarged to two times its normal size. There is mild edema of the ankles bilaterally. The relaxation phase of the Achilles reflex is greatly prolonged. Which of the following is the most likely diagnosis?
- (A) Chronic lymphocytic thyroiditis (Hashimoto disease)
 - (B) Defect in thyroxine (T₄) biosynthesis
 - (C) Graves disease
 - (D) Multinodular goiter
 - (E) Riedel thyroiditis
 - (F) Thyroid cyst
 - (G) Thyroid lymphoma
 - (H) Thyroiditis
106. A 10-year-old boy is brought for a follow-up examination 2 days after he was seen in the emergency department because of hives, hoarseness, and light-headedness. His symptoms began 15 minutes after he was stung by a bee and lasted approximately 60 minutes; they resolved before he was treated. He has been stung by bees three times over the past year, and each reaction has been more severe. Examination shows no abnormalities. Which of the following is the most appropriate recommendation to prevent future morbidity and mortality from this condition?
- (A) Avoid areas known to have bees
 - (B) Avoid wearing colorful clothing outside
 - (C) Carrying diphenhydramine tablets
 - (D) Carrying self-injectable epinephrine
 - (E) Seek immediate medical attention following any future sting

107. A previously healthy 17-year-old girl comes to the emergency department because of a 5-day history of progressive lower abdominal pain, fever, and malodorous vaginal discharge. Menarche was at the age of 12 years, and her last menstrual period was 2 weeks ago. She is sexually active with one male partner and uses a combination contraceptive patch. Her temperature is 37.8°C (100°F), pulse is 90/min, respirations are 22/min, and blood pressure is 110/70 mm Hg. Abdominal examination shows severe lower quadrant tenderness bilaterally. Pelvic examination shows a purulent cervical discharge, cervical motion tenderness, and bilateral adnexal tenderness. Her hemoglobin concentration is 10.5 g/dL, leukocyte count is 13,000/mm³, and platelet count is 345,000/mm³. A urine pregnancy test is negative. Which of the following is the most appropriate pharmacotherapy?
- (A) Oral azithromycin
 - (B) Vaginal clindamycin
 - (C) Intravenous penicillin and vancomycin
 - (D) Intramuscular ceftriaxone and oral doxycycline
 - (E) Intravenous oxacillin and metronidazole
108. A 32-year-old woman, gravida 2, para 1, at 8 weeks' gestation comes to the physician for her first prenatal visit. She delivered her first child spontaneously at 34 weeks' gestation; pregnancy was complicated by iron deficiency anemia. She has no other history of serious illness. Her blood pressure is 100/70 mm Hg. Examination shows no abnormalities. Ultrasonography shows a dichorionic-diamniotic twin intrauterine pregnancy consistent in size with an 8-week gestation. This patient is at increased risk for which of the following complications?
- (A) Abruptio placentae
 - (B) Fetal chromosome abnormality
 - (C) Hyperthyroidism
 - (D) Preterm labor and delivery
 - (E) Twin transfusion syndrome
109. Four days after undergoing open reduction and internal fixation of a fracture of the right femur sustained in a motor vehicle collision, a 47-year-old man continues to have agitation and confusion despite treatment with haloperidol. He has mild hypertension. Other medications include acetaminophen, atenolol, and prophylactic subcutaneous heparin. His temperature is 37.2°C (99°F), pulse is 98/min, respirations are 24/min, and blood pressure is 168/98 mm Hg. During the examination, he is uncooperative and refuses to answer questions. Neurologic examination shows tremulousness and no focal findings. He is oriented to person but not to place or time. A CT scan of the head shows no abnormalities. Which of the following is the most likely cause of these findings?
- (A) Adverse effect of medication
 - (B) Alcohol withdrawal
 - (C) Fat emboli
 - (D) Sepsis
 - (E) Subdural hematoma
110. A sexually active 20-year-old woman has had fever, chills, malaise, and pain of the vulva for 2 days. Examination shows a vulvar pustule that has ulcerated and formed multiple satellite lesions. Nodes are palpated in the inguinal and femoral areas. A smear of fluid from the lesions establishes the diagnosis. Which of the following is the most likely causal organism?
- (A) *Chlamydia trachomatis*
 - (B) *Haemophilus ducreyi*
 - (C) *Neisseria gonorrhoeae*
 - (D) *Streptococcus pyogenes* (group A)
 - (E) *Treponema pallidum*

111. An 18-year-old man is brought to the emergency department 10 minutes after he sustained a stab wound to his chest. On arrival, he is unresponsive to painful stimuli. His pulse is 130/min, respirations are 8/min and shallow, and palpable systolic blood pressure is 60 mm Hg. He is intubated and mechanically ventilated, and infusion of 0.9% saline is begun. After 5 minutes, his pulse is 130/min, and blood pressure is 70/40 mm Hg. Examination shows a 2-cm wound at the left sixth intercostal space at the midclavicular line. There is jugular venous distention. Breath sounds are normal. The trachea is at the midline. Heart sounds are not audible. Which of the following is the most appropriate next step in management?
- (A) Chest x-ray
 - (B) Echocardiography
 - (C) Bronchoscopy
 - (D) Pericardiocentesis
 - (E) Placement of a right chest tube
112. A 42-year-old man comes to the physician because of malaise, muscle and joint pain, and temperatures to 38.4°C (101.1°F) for 3 days. Three months ago, he underwent cadaveric renal transplantation resulting in immediate kidney function. At the time of discharge, his serum creatinine concentration was 0.8 mg/dL. He is receiving cyclosporine and corticosteroids. Examination shows no abnormalities. His leukocyte count is 2700/mm³, and serum creatinine concentration is 1.6 mg/dL; serum cyclosporine concentration is in the therapeutic range. A biopsy of the transplanted kidney shows intracellular inclusion bodies. Which of the following is the most appropriate next step in management?
- (A) Increase the dosage of corticosteroids
 - (B) Increase the dosage of cyclosporine
 - (C) Begin amphotericin therapy
 - (D) Begin ganciclovir therapy
 - (E) Begin heparin therapy
113. A 25-year-old woman comes to the physician because of a 2-month history of numbness in her right hand. During this period, she has had tingling in the right ring and small fingers most of the time. She has no history of serious illness and takes no medications. She is employed as a cashier and uses a computer at home. She played as a pitcher in a softball league for 5 years until she stopped 2 years ago. Vital signs are within normal limits. Examination shows full muscle strength. Palpation of the right elbow produces a jolt of severe pain in the right ring and small fingers. Sensation to pinprick and light touch is decreased over the medial half of the right ring finger and the entire small finger. The most likely cause of these findings is entrapment of which of the following on the right?
- (A) Brachial plexus at the axilla
 - (B) Median nerve at the wrist
 - (C) Musculocutaneous nerve at the forearm
 - (D) Radial nerve at the forearm
 - (E) Ulnar nerve at the elbow
114. A previously healthy 27-year-old man comes to the physician 4 weeks after noticing three nontender lesions on his penis. He says they have not changed in size. He is sexually active with multiple male and female partners and uses condoms inconsistently. He takes no medications. He drinks two to five beers on social occasions. He occasionally smokes marijuana. His temperature is 36.9°C (98.4°F). There is no lymphadenopathy. Examination shows three sessile, flesh-colored lesions on the shaft of the penis that are 10 mm in diameter. On application of a dilute solution of acetic acid, the lesions turn white. The remainder of the examination shows no abnormalities. Which of the following is the most appropriate next step in management?
- (A) Topical ganciclovir therapy
 - (B) Oral acyclovir therapy
 - (C) Oral doxycycline therapy
 - (D) Intramuscular penicillin therapy
 - (E) Cryotherapy

115. A 20-year-old man has had frequent upper respiratory tract infections over the past 4 years. He has daily purulent sputum and has noted decreased exercise tolerance over the past 2 years. He and his wife have been unable to conceive because of his low sperm count. Scattered expiratory wheezing and rhonchi are heard throughout both lung fields. An x-ray of the chest shows hyperinflation. Spirometry shows a decreased FEV₁:FVC ratio. Which of the following is most likely to confirm the diagnosis?
- (A) Arterial blood gas analysis
 - (B) Examination of sputum for eosinophils
 - (C) Sweat chloride test
 - (D) Sputum cytology
 - (E) Bronchoscopy
116. A 27-year-old man is brought to the emergency department by his sister because of increasing confusion for 10 hours. He is unable to answer questions. His sister states that he recently saw a psychiatrist for the first time because of hearing voices; he was prescribed a medication, but she is not sure what it is. She says that he has a history of excessive drinking, and she thinks that he has also experimented with illicit drugs. He appears acutely ill. His temperature is 39.1°C (102.3°F), pulse is 124/min, and blood pressure is 160/102 mm Hg. Examination shows profuse diaphoresis and muscle rigidity. His neck is supple. The abdomen is soft and nontender. Mental status examination shows psychomotor agitation alternating with lethargy. His leukocyte count is 15,600/mm³, and serum creatine kinase activity is 943 U/L. Which of the following is the most likely explanation for this patient's symptoms?
- (A) Amphetamine intoxication
 - (B) Bacterial meningitis
 - (C) Delirium tremens
 - (D) Neuroleptic malignant syndrome
 - (E) Sepsis
117. A 27-year-old woman comes to the physician because of a 3-year history of chronic diarrhea and intermittent, crampy, lower abdominal pain. The pain is usually relieved with defecation and does not occur at night or interfere with sleep. She says she is frustrated by her symptoms and has stopped traveling because of her frequent, urgent need to use the bathroom. She has no history of serious illness and takes no medications. Her temperature is 37°C (98.6°F), pulse is 70/min, respirations are 14/min, and blood pressure is 120/80 mm Hg. The lower abdomen is mildly tender to palpation; there is no rebound tenderness or guarding. The remainder of the examination shows no abnormalities. Results of laboratory studies are within the reference ranges. Test of the stool for occult blood is negative. Antigliadin antibodies are not present. Which of the following is the most appropriate pharmacotherapy?
- (A) Nefazodone
 - (B) Nortriptyline
 - (C) Phenelzine
 - (D) Sertraline
 - (E) Venlafaxine
118. A 57-year-old man comes to the emergency department because of cramping in his hands and feet and numbness and tingling around his lips and in his fingers; these symptoms occurred intermittently for 6 months but have been progressively severe during the past 2 weeks. He also has had a 13-kg (30-lb) weight loss and bulky, foul-smelling stools that do not flush easily. He has a 10-year history of drinking 8 to 10 beers daily. He has been hospitalized twice for severe abdominal pain 4 and 6 years ago. His pulse is 80/min, and blood pressure is 105/65 mm Hg. He appears cachectic and chronically ill. The abdomen is nontender. Deep tendon reflexes are 4+ bilaterally. Chvostek and Trousseau signs are present. His serum calcium concentration is 6.5 mg/dL. Which of the following is the most likely diagnosis?
- (A) Hypomagnesemia
 - (B) Hypoparathyroidism
 - (C) Osteomalacia
 - (D) Vitamin D deficiency

119. A 37-year-old woman is brought to the emergency department 45 minutes after she was found unconscious on her apartment floor. Her coworkers became concerned when she did not arrive for work. On arrival, she is unable to provide a history. Her pulse is 96/min, respirations are 12/min, and blood pressure is 124/58 mm Hg. Examination shows erythema, warmth, and induration of the upper back, buttocks, and posterior thighs. Her serum creatine kinase activity is 10,300 U/L. Urine toxicology screening is positive for opiates and cocaine. Urine dipstick is strongly positive for blood. Microscopic examination of the urine shows pigmented granular casts and rare erythrocytes. This patient is at increased risk for which of the following conditions over the next 24 hours?
- (A) Acute respiratory distress syndrome
 - (B) Acute tubular necrosis
 - (C) Cerebral edema
 - (D) Cerebral hemorrhage
 - (E) Cocaine-induced cardiomyopathy
120. A study is conducted to assess the effectiveness of a new drug for the treatment of type 2 diabetes mellitus. A total of 1000 patients with type 2 diabetes mellitus are enrolled. Patients are randomly assigned to receive the new drug or standard treatment. The alpha and beta values for calculating probability are 0.05 and 0.20, respectively. Results show that the new drug is significantly better than standard treatment. If this study had been performed in a population of only 500 patients, which of the following would have been most likely to increase?
- (A) Chance of a type I error
 - (B) Chance of a type II error
 - (C) Power of the study
 - (D) Sensitivity of the study
 - (E) Specificity of the study

ANSWER FORM FOR USMLE STEP 2 CK SAMPLE TEST QUESTIONS

Block 1 (Questions 1-40)

1. _____	9. _____	17. _____	25. _____	33. _____
2. _____	10. _____	18. _____	26. _____	34. _____
3. _____	11. _____	19. _____	27. _____	35. _____
4. _____	12. _____	20. _____	28. _____	36. _____
5. _____	13. _____	21. _____	29. _____	37. _____
6. _____	14. _____	22. _____	30. _____	38. _____
7. _____	15. _____	23. _____	31. _____	39. _____
8. _____	16. _____	24. _____	32. _____	40. _____

Block 2 (Questions 41-80)

41. _____	49. _____	57. _____	65. _____	73. _____
42. _____	50. _____	58. _____	66. _____	74. _____
43. _____	51. _____	59. _____	67. _____	75. _____
44. _____	52. _____	60. _____	68. _____	76. _____
45. _____	53. _____	61. _____	69. _____	77. _____
46. _____	54. _____	62. _____	70. _____	78. _____
47. _____	55. _____	63. _____	71. _____	79. _____
48. _____	56. _____	64. _____	72. _____	80. _____

Block 3 (Questions 81-120)

81. _____	89. _____	97. _____	105. _____	113. _____
82. _____	90. _____	98. _____	106. _____	114. _____
83. _____	91. _____	99. _____	107. _____	115. _____
84. _____	92. _____	100. _____	108. _____	116. _____
85. _____	93. _____	101. _____	109. _____	117. _____
86. _____	94. _____	102. _____	110. _____	118. _____
87. _____	95. _____	103. _____	111. _____	119. _____
88. _____	96. _____	104. _____	112. _____	120. _____

ANSWER KEY FOR USMLE STEP 2 CK SAMPLE TEST QUESTIONS**Block 1 (Questions 1-40)**

1. E	9. A	17. D	25. C	33. F
2. C	10. C	18. B	26. B	34. E
3. H	11. D	19. B	27. F	35. F
4. D	12. D	20. D	28. B	36. E
5. B	13. C	21. B	29. B	37. C
6. D	14. D	22. D	30. F	38. A
7. A	15. A	23. B	31. A	39. D
8. A	16. B	24. A	32. G	40. E

Block 2 (Questions 41-80)

41. E	49. A	57. E	65. D	73. B
42. A	50. D	58. A	66. E	74. A
43. A	51. E	59. E	67. A	75. B
44. A	52. C	60. A	68. B	76. C
45. A	53. D	61. D	69. D	77. D
46. F	54. C	62. E	70. C	78. B
47. B	55. B	63. A	71. A	79. C
48. C	56. E	64. A	72. D	80. B

Block 3 (Questions 81-120)

81. A	89. D	97. B	105. A	113. E
82. B	90. A	98. E	106. D	114. E
83. A	91. A	99. C	107. D	115. C
84. E	92. B	100. C	108. D	116. D
85. D	93. D	101. E	109. B	117. B
86. A	94. F	102. D	110. B	118. D
87. B	95. B	103. A	111. D	119. B
88. D	96. B	104. A	112. D	120. B